



## OPERATOR'S INSTRUCTION AND REFERENCE MANUAL

*for Differential Spacing VariTyper  
Office Composing Machines*



To aid in visualizing the operations discussed in this manual, the covers have been designed with flaps which fold-out beyond the pages. The front cover fold-out contains a picture of the front view of the machine. The back cover fold-out contains a picture of the keyboard. The individual parts are numbered and identified in the nomenclature printed below each picture.

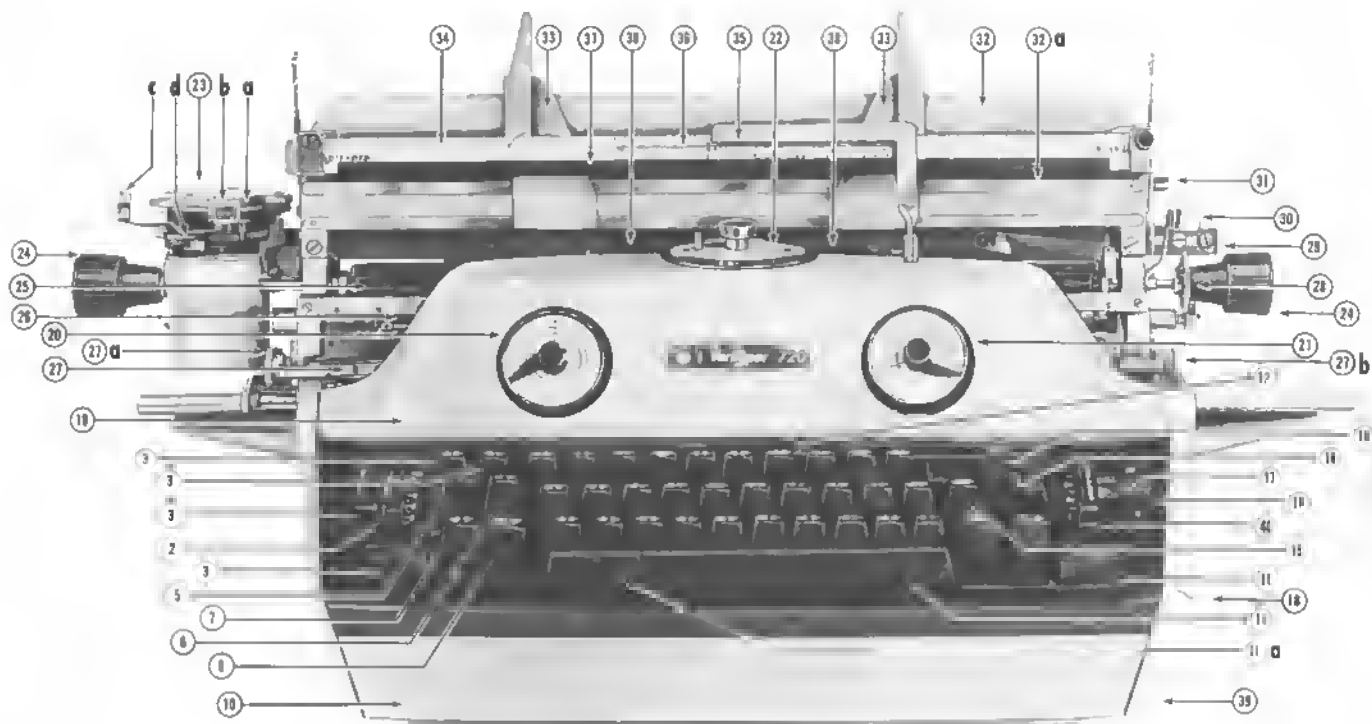
Throughout the text as a new part is introduced, or when it is first mentioned in another section of the manual, the number with which it is labeled (on the fold-outs) follows it in parenthesis and both the part and number will be set in the following type: **Part Name (00)**.

Until operator is familiar with the locations of these parts, it is suggested that the manual be read with the fold-outs open so that easy reference may be made to the parts as they are discussed.

**INSTRUCTION AND  
REFERENCE MANUAL FOR  
DIFFERENTIAL SPACING  
VARITYPER OFFICE COMPOSING MACHINES**

**VARITYPER DIVISION • MOUNT PLEASANT AVENUE • EAST HANOVER, NEW JERSEY 07936 U.S.A.**

**ADDRESSOGRAPH MULTIGRAPH CORPORATION**



## NOMENCLATURE

- |                                     |  |  |
|-------------------------------------|--|--|
| 1. Type Change Lever                | 17. Horizontal Spacing and On-Off Indicator Window | 26. VariLine Gear                                |
| 2. Impression Control Lever         | 18. Horizontal Spacing Lever                       | 29. Actuating Bar Lock                           |
| 3. Hold Key                         | 19. Front Cover                                    | 30. Feed Roll Release Lever                      |
| 4. One Increment Space Key          | 20. Margin Dial                                    | 31. Carriage Release Lever                       |
| 5. Figure Lock Key                  | 21. Justifier Dial                                 | 32. Paper Table                                  |
| 6. Capital Lock Key                 | 22. Anvil  | a. Top Metal Rail                                |
| 7. Figure Key                       | 23. Line Spacing Device                            | 33. Paper Guides                                 |
| 8. Capital Key                      | a. Dial  | 34. Horizontal Plotting Scale                    |
| 9. Forms Key                        | b. Point Indicator                                 | 35. Gunsight                                     |
| 10. Type Drawer                     | c. Line Feed Lever                                 | 36. Horizontal Centering Scale                   |
| 11. Two Increment Space Bar         | d. Line Feed Direction Lever                       | 37. Paper Table Scale                            |
| a. Three Increment Space Bar        | 24. Feed Roll Knob                                 | 38. Alignment Guides                             |
| 12. Differential-Standard-Out Lever | 25. Feed Rolls                                     | 39. On-Off Switch                                |
| 13. Three Increment Back Space Key  | 26. Paper Basket                                   | 40. Suppression Control Lever                    |
| 14. One Increment Back Space Key    | 27. Margin Scale                                   | 41. Automatic Carriage Return and Paper Feed Key |
| 15. Tabulator Key                   | a. Justifier Dial Adjuster Knob                    |  |
| 16. Non-Print Lever                 | b. Margin Stop Adjuster Knob                       |  |

\*NOTE: Before typing, VariTyper Machine must be turned on by pressing on-off switch (39). Indicator window (17) is illuminated when machine is on.



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COMPOSED ON VARITYPER EQUIPMENT — LITHOGRAPHED IN U.S.A.

## PREFACE

Before starting down the road to becoming a VariTyper operator, the beginner should have an understanding of what the VariTyper Machine is, what it is used for, and how it differs from the typewriter.

The typewriter, of course, is basically an office writing instrument. It was conceived as a mechanical substitute for handwriting for a variety of office writing tasks such as correspondence, reports, etc. Its product is usually an original and a few carbon copies.

The Differential Spacing (often referred to as DS) VariTyper Machine looks and operates very much like the typewriter. Its keyboard is of standard arrangement, but confines the keys to three banks instead of the usual four. It 'types' directly on paper or on duplicating masters, and the work can be seen in progress just as in the ordinary typewriter. But, that's where the resemblance ends.

The basic function of the VariTyper Machine is to compose original or master copy which will be reproduced by some printing or duplicating process. In that sense, the function of the VariTyper Machine is similar to that of the Linotype and other conventional typesetting machines. The professional appearance of copy composed on VariTyper equipment results from such unique features as instantly changeable type faces in many styles and sizes, variable spacing, controlled impression, and differential letter spacing.

The training of the VariTyper operator concentrates on actual machine operation, but also includes familiarization with the associated skills which make it possible to produce professional looking typography so easily. This manual covers both phases in detail.

The beginning operator is taken step-by-step through all phases of VariTyper Machine operation, learning each function in relation to specific types of composition. It is important that these operations be learned exactly as they are described. While the creative or imaginative person will often discover alternatives which may be as good or better than the prescribed methods, the ones described are proven and have a specific relationship to one another. On the other hand, when the operator has passed the beginner stage, exploration of alternative operational methods can be beneficial.

The operator will also be introduced to related techniques such as copyfitting, type selection, etc. Mastery of these are essential for the operator who wishes to make the most of the inherent advantages of the VariTyper method.

*your  
guarantee  
of quality  
is in  
the name . . . . .*

***VariTyper***<sup>®</sup>

• Your VariTyper Composing Machine and VariTyper Certified Supplies are perfect working companions. Each product is planned for the best possible individual result, and to aid in producing the maximum performance from all other VariTyper materials used. When VariTyper Certified Supplies are used exclusively, you can be sure of the best possible results.

• Your Certified VariTyper product is subjected to laboratory tests conducted by experts. This continuing program of testing results in uniformity of quality and performance.

• Your VariTyper Representative understands your needs. He represents one manufacturer, one source of supplies, one source of service. When VariTyper Certified Supplies are used exclusively on your VariTyper Composing Machine, sole responsibility for satisfactory end results can be established with one source.



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## ♦ CHANGEABLE TYPES ♦

The name of the changeable type plate for a VariType Machine is "Type Font". Most type fonts contain 90 characters arranged in three rows or levels on the font:

Top row — Lower Case (L.C.).

Middle row — Upper Case (CAPS).

Bottom row — Figures and Symbols (FIGS).

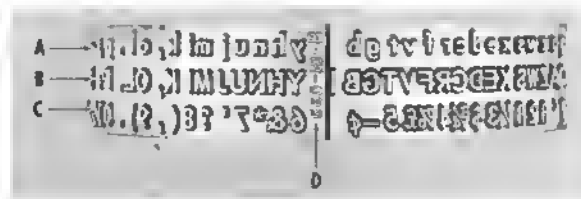


Figure 1

Type font showing face of type — Top row (A), Middle row (B), Bottom row (C) and the Identification Number (D) on the DS type font (660-10B).



Figure 2

Type font with a ruling segment, which is used to rule lines automatically. The identification number of the type font and the number of the segment, is scribed on the back of type fonts having ruling segments.

### TYPE FONT IDENTIFICATION NUMBER

**660-10B**

Style Number	Point Size	Horizontal Spacing
-----------------	---------------	-----------------------

Figure 3

Each VariType type font is identified by a number located along the *center line* of the type font (Figure 1), except fonts with *ruling segments* (Figure 2) which have this number *scribed* on the back of the font. The **Identification Number** indicates three things:

1. The first 3 or 4 digits are the **Style Number**.
2. The number following the *hyphen (-)* is the **Point Size** (*minimum* line spacing setting).
3. The *letter* denotes its **Horizontal Spacing**.

### SPECIAL TYPE FONTS

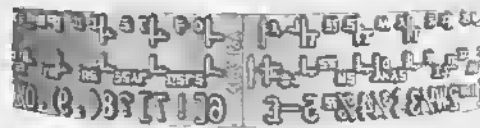


Figure 4

Korean Type Font. Type fonts are available in approximately sixty different languages.

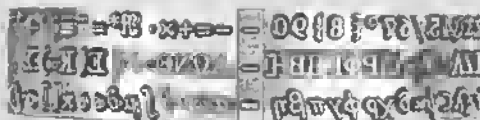


Figure 5

Mathematical Type Font. Special type fonts are available for composing equations, fractions, tariff symbols, engineering drawings, etc.

### PARTS OF A VARITYPER TYPE FONT



Figure 6

Type font, standing end, showing: The **Face** (A); the **Web** (C); and the **Bushing** (B).

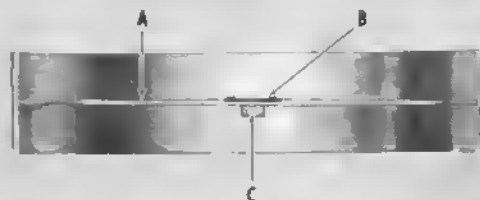


Figure 7

Back of type font showing: The **Web** (A) — a thin metal guide; the **Bushing** (B); and the **Nub** (C) of the bushing, (the protrusion below the bottom of the web).

## INSERTING TYPE FONTS IN MACHINE



Figure 8

The anvil (22) will hold two type fonts, one in printing position (*toward carriage*) and the other in reserve position (*toward keyboard*). Push the type change lever (1) forward to raise anvil. Place a type font (nub of hushing down) on top of machine (Figure 8).

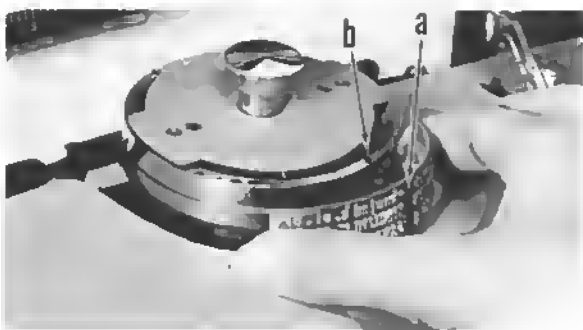


Figure 9

Slide type font forward so center line of type font (a), which is aligned with the bushing, is in line with a dot (b), which is the location of the wide slot in the anvil (Figure 9).

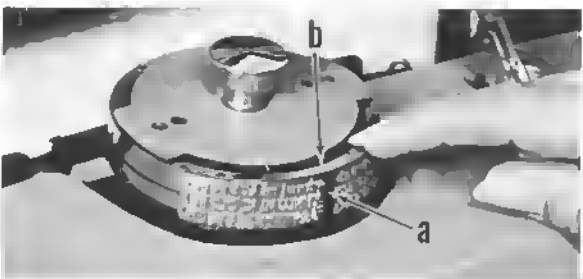


Figure 10

Slide type font left until center line (a) of type is exactly aligned with center line (b) of anvil (Figure 10).

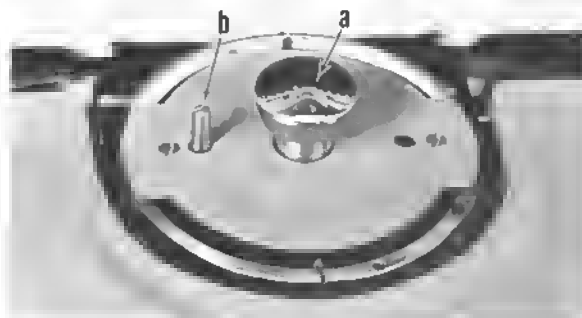


Figure 11

Lift anvil knob (a) and turn it as far as it will go (to printing position) and release. Lower anvil by pulling type change lever forward. The locating pin (b) shows when anvil is lowered (Figure 11).



Figure 12

Insert second type in anvil and lower into the machine. To swing from one type to the other, use anvil knob (22a). Type change lever is used only when inserting and removing type or to align types with anvil center line (Figure 12).

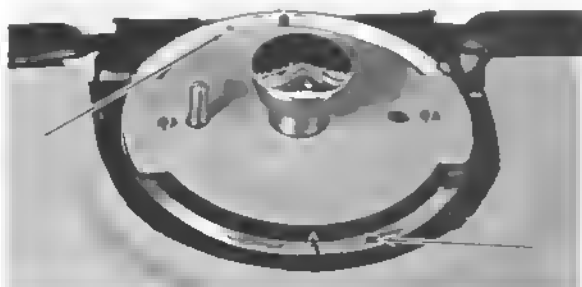


Figure 13

The dots on either side of the anvil are colored. Insert the most frequently used type in the side marked with a "black" dot, the auxiliary type (italic or sub-heading type) in the side with the "red" dot. Thus, an operator will always know which type is in printing position (Figure 13).

# TYPE FONT FAMILIES

The type font "run-offs" below show what is meant by the term "type family". The Garamond Family has different sizes in the light face and bold face series, as well as matching italics in these weights. There are also two sizes available with large caps and small caps on the same font.

The sans serif family has three weights (light, medium and heavy) and matching italics. There are several condensed type families.

All differential spacing type fonts are numbered according to the basic style. Upright type styles end in "0" — (620, 680, 870, etc.); italic, or slant, types end in "5" — (625, 685, 875, etc.). Two Roman style families have large caps and small caps on the same type font and their identification numbers end in the numeral "1" — (681 and 601). The 2000 series Copperplate types also contain two sizes of capitals on each of twelve different type fonts.

## — SERIF TYPES —

### 620 SERIES

Garamond Light — 620-12A  
Garamond Light — 620-10B  
Garamond Light — 620-8C  
Garamond Light — 620-7D

### 625 SERIES

*Garamond Light Italic* — 625-10B  
*Garamond Light Italic* — 625-8C  
*Garamond Light Italic* — 625-7D

### 680 SERIES

Garamond Bold — 680-12A  
Garamond Bold — 680-10B  
Garamond Bold — 680-8C  
Garamond Bold — 680-7D

### 685 SERIES

*Garamond Bold Italic* — 685-10B  
*Garamond Bold Italic* — 685-8C  
*Garamond Bold Italic* — 685-7D

### 681 SERIES

GARAMOND BOLD CAPS & SMALL CAPS — 681-10B  
GARAMOND BOLD CAPS & SMALL CAPS — 681-8C

## — SANS SERIF TYPES —

### 870 SERIES

Sans Serif Light — 870-12A  
Sans Serif Light — 870-10B  
Sans Serif Light — 870-8C  
Sans Serif Light — 870-7D

### 875 SERIES

*Sans Serif Light Italic* — 875-10B  
*Sans Serif Light Italic* — 875-8C  
*Sans Serif Light Italic* — 875-7D

### 660 SERIES

Sans Serif Medium — 660-12A  
Sans Serif Medium — 660-10B  
Sans Serif Medium — 660-8C  
Sans Serif Medium — 660-7D

### 665 SERIES

*Sans Serif Medium Italic* — 665-10B  
*Sans Serif Medium Italic* — 665-8C  
*Sans Serif Medium Italic* — 665-7D

### 740 SERIES

Sans Serif Medium Condensed — 740-10C  
Sans Serif Medium Condensed — 740-8D

### 670 SERIES

Sans Serif Bold — 670-12A  
Sans Serif Bold — 670-10B  
Sans Serif Bold — 670-8C  
Sans Serif Bold — 670-7D

### 675 SERIES

*Sans Serif Bold Italic* — 675-10B  
*Sans Serif Bold Italic* — 675-8C  
*Sans Serif Bold Italic* — 675-7D

### 900 SERIES

Sans Serif Bold Condensed — 900-10C

# VARIABLE LETTER AND LINE SPACING

## VERTICAL SPACING

### LINE SPACING DDWN THE PAGE

The DS VariTyper Machine writes at different spacings down the page, as well as across the page. The line spacing (vertical spacing) mechanism is called the **line spacing device (23)** (Figure 14). It can be set instantly to suit the many sizes of type and it permits flexibility in varying spacing between lines. Further explanations of its use are detailed on Page 21, as well as in other sections of the manual.

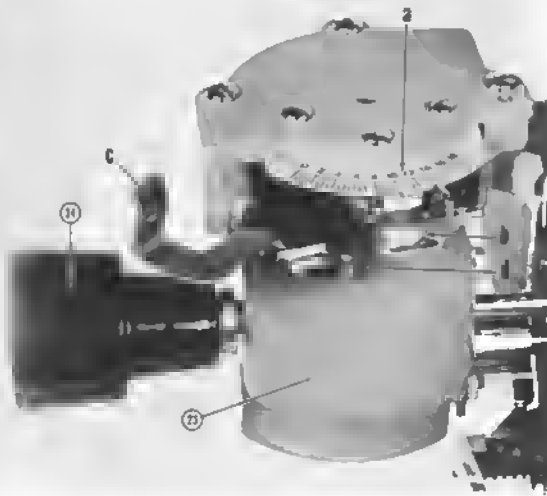


Figure 14

### SETTING THE LINE SPACING DEVICE

The line spacing device (23) has four parts (Figure 14); its dial (23a) is calibrated in half-point graduations between 0 and 18 points.

The point indicator (23b) regulates the amount of paper feed or line spacing. To set it, pull out and align its groove with the desired graduation on the dial.

The line feed lever (23c) is used to feed paper up or down in the machine.

The line feed direction lever (23d) regulates the direction in which the paper feeds.

1. Set it to the *right* to feed paper up. Feed paper by using —
  - a. Automatic carriage return and paper feed key (41) or,
  - b. Line feed lever (23c).
2. Set it to the *left* to feed paper down into the paper basket (26). *NOTE:* Paper *must* be fed back down into the paper basket by use of the line feed lever (23c). This *cannot* be accomplished by using the automatic carriage return and paper feed key (41).

To return to a line above the present writing line paper must *always* be fed down (into the paper basket) one extra line, then back up to the desired line. This is necessary to take up the slack in the gears to assure that the base lines of characters will line up.

The left feed roll knob (24) engages the line spacing device with feed rolls (25). Push knob in and turn clockwise (top of it toward operator) to engage and in opposite direction to disengage. *NOTE:* When line spacing device is engaged, feed rolls may be turned by using the line feed lever or automatic carriage return and paper feed key. When the line spacing device is disengaged, paper may be "free rolled" (moved up and down freely) by turning either feed roll knob.

## HORIZONTAL SPACING

### LETTER SPACING ACROSS THE PAGE

Each DS type font writes at one of the four horizontal spacings (A, B, C or D). The correct letter spacing is indicated on each font.

### HORIZONTAL SPACING SETTINGS

The horizontal spacing lever (18) is easily lifted and lowered into each of the four slots. The selected spacing appears in indicator window (17). Figures 15 and 16 show lever and window for "A" and "D" horizontal spacings.

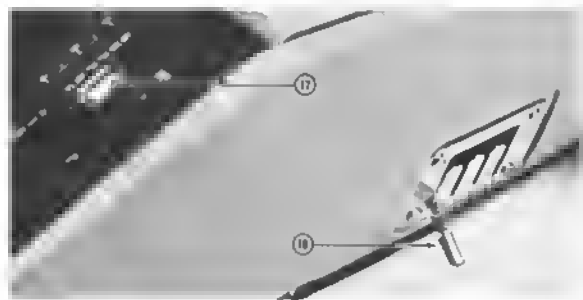


Figure 15

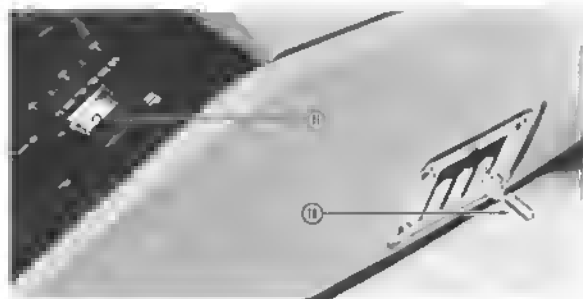


Figure 16

# INSERTING WRITING MATERIALS IN THE MACHINE

The design of the carriage and paper basket of the DS VariTyper Machine permits its use with a wide variety of sizes of writing materials. It accommodates narrow sheets, as well as those exceeding the width of the carriage.

Most operators find it convenient to use composition paper somewhat larger than the size of the finished copy. This allows flexibility in positioning copy and provides adequate margins outside the printing area for making corrections.

One method is used for inserting short materials and two methods (a personal option) are used for inserting long materials. Both methods for long sheets utilize a *split wooden roller*, around which the material is wrapped to prevent its creasing in the paper basket.

## INSERTING SHORT MATERIALS

Regular typing materials, letter size sheets, envelopes, index cards, etc., may be placed directly into the paper basket (Figure 17).

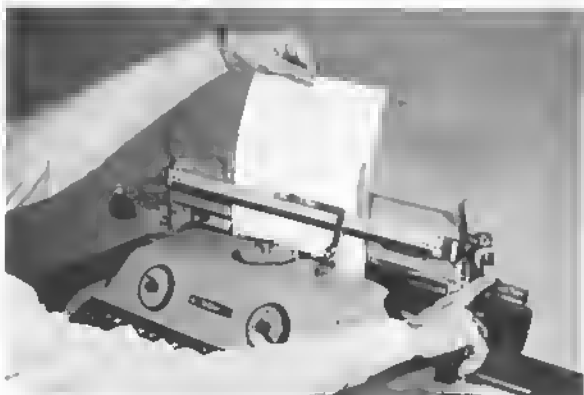


Figure 17

1. Open feed rolls (25) by pushing back on feed roll release lever (30).
2. Drop sheet between open feed rolls. Sheet will stop at bottom of paper basket (26).
3. Center sheet in carriage, close feed rolls by pulling the feed roll release lever (30) forward.
4. Move paper guides (33) to hold paper.
5. Disengage line spacing device, turn feed roll knob (24) (top toward operator) to roll paper down in basket to starting position for copy.

The gentle (non-creasing) folds that occur will flatten out shortly after paper is removed from the machine.

## INSERTING LONG MATERIALS

### METHOD I—Winding around split wooden roller before inserting in machine.

Long sheets of paper, direct image masters, stencils, tracings, etc., are wrapped around a split wooden roller outside of the machine (Figure 18).



Figure 18

1. Pull out hook clamps in split roller.
2. Open split roller and position bottom of writing material near left end of opening.
3. Close roller and push in both clamps (see Figure 18).
4. Roll writing material (writing surface inside) around roller tightly and evenly allowing 2 or 3 inches of it to extend at top.
5. Hold top of material in left hand and guide, between open feed rolls, into paper basket (26). Do not insert beyond left end of paper basket or the Line Spacing Device housing will interfere with the roller movement.
6. Center material in carriage, place its top against bottom of top metal rail of paper table (32a) to straighten it. Close feed rolls.

## INSTRUCTIONS FOR INSERTING STENCILS

For best results in composing stencils or mechanical negatives a transparent overlay sheet (available with these items) should be used.

1. Remove cardboard backing sheet at perforation.
2. Place wax, fiber, or special VariTyper backing sheet behind stencil.
3. Align bottoms of overlay sheet, stencil and backing sheet. Lock in split roller.
4. Insert in machine and straighten.

Some operators use paper clips at the top outside edges to hold the three layers together.

#### METHOD II—Inserting split roller in machine before winding material around it.

1. Open feed rolls and insert split roller in paper basket with open jaws of roller facing upward (A of Figure 19). The left end of roller *must not* extend beyond the right side of the line spacing device housing. Insertion beyond this point may result in uneven paper feed.
2. Insert and center writing material in feed rolls allowing its lower end to rest in open jaws. Close roller and lock clamps.
3. Hold top of writing material with left hand, winding roller so working surface of material is rolled inward.
4. Place top of material against *bottom edge* of top metal rail of paper table to straighten it. Close feed rolls.

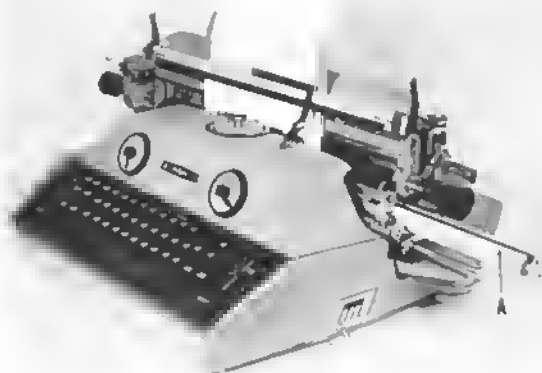


Figure 19

#### ALIGNING AND STRAIGHTENING COPY

In front of and at each side of the anvil (22) are metal strips called **alignment guides** (38) (Figure 20). The base line of characters, being typed, must lie on the top edge of these guides\*. This enables the guides to be used to align copy vertically and to straighten copy horizontally in the machine. For accuracy the same guide (usually the left guide) should always be used.

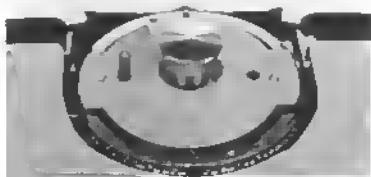


Figure 20

\*If base line of characters do not lie exactly on top edge of *alignment guide*, it can be adjusted by an authorized VariTyper Serviceman when making a maintenance inspection.

#### TESTING ALIGNMENT OF GUIDE

1. Type a few "X's".
2. Move carriage so *left* guide is below characters just typed.
3. Bring paper forward against alignment guide to determine relationship between top of guide and base line of characters (above, below or dead on). If base line of characters and guide are not exactly aligned, try to approximate the proper position until it can be adjusted.

#### RE-ALIGNING TEXT COPY

If the line spacing device has been disengaged and cannot be used to accurately return to a line previously typed, or if paper has been taken out and must be re-inserted into the machine, the alignment guide is used as follows:

1. Free roll paper and bring it forward against alignment guide to align with base line of letters in line to be corrected.
2. Type the first character of that line in the margin outside the printing area.
3. If test letter is too high or too low, adjust vertical position accordingly and type another test letter, etc.
4. When correct position is located engage feed rolls and compose entry, correction, etc.

The results of this method of re-aligning copy is illustrated in Figure 21. The first three words of the top line were typed over (they will appear darker).

T	T	The usual first step of the layout man in planning a job of printing is to make small or thumbnail sketches. He selects the best of these and makes a rough layout.
---	---	---

Figure 21

#### Aligning Materials With Guide Lines or Rules

If material has short guide lines in its margins (direct image masters, stencils, etc.) the carriage is transported back and forth to check alignment of matching guide lines in left and right margins and the sheet adjusted until lines are positioned just above or touching the alignment guide.

If material has horizontal rules (pre-printed grids or graphs, pre-ruled forms, etc.) the alignment guide is aligned with the left side of the rule and the carriage transported across the page to see if the rule follows the top of the guide. If the sheet is not straight, it is adjusted and the process repeated until it is aligned.

# HOW A VARITYPER MACHINE WRITES

The process by which a VariType Machine images writing materials (papers, masters, stencils, etc.) is unique. The following self-demonstrations will help an operator understand the mechanics of the process and see its advantages for producing master copy for reproduction.

## A PREVIEW OF THE IMAGING PROCESS

Without paper in the machine, perform the following steps:

1. Insert a type font and turn it to the active or printing position (towards the hammer).
2. Press any key all the way down several times and watch the metal hammer come forward and strike the type.

When paper is in the machine, the hammer (Figure 22) presses the paper against the type font which has a carbon ribbon positioned in front of it, and thus images individual characters on the paper.

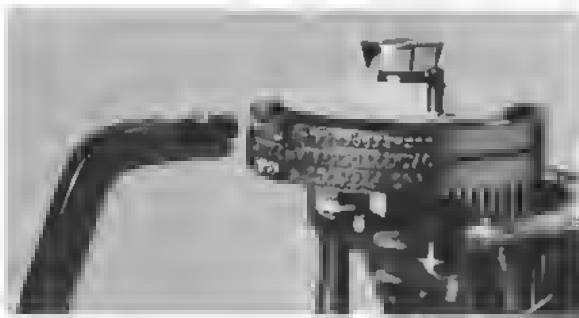


Figure 22

## STAGES OF KEYBOARDING PROCESS POSITIONING THE TYPE FONT

The following steps will show how a key positions the type font:

1. Press the "a" key (very slowly and lightly) until the type stops moving. Make sure to stop pressing before the hammer releases and strikes the type. Repeat this several times, watching the type move clockwise and stop.
2. Press the "p" key in the same manner as in Step 1. Watch the type move in the opposite direction and stop.

Each time a key is pressed the type moves and automatically stops when the selected character is in position to print.

## ACTIVATING THE HAMMER

The next steps will show how the hammer is activated (released to come forward):

1. Press the "a" key (lightly and slowly) until the type font stops.
2. Continue to press down on the key (lightly) and repeat the entire procedure several times.

The hammer comes forward to strike the type when a key is "bottomed" (pressed all the way down). Notice that *bottoming* the key, to activate the hammer, required only a very light pressure.

## A REVIEW OF THE KEYBOARDING PROCESS

The last two demonstrations have illustrated the relationship between a key and the type font, and a key and the hammer. To summarize the mechanics of the operation, the following action occurs each time a letter is printed.

1. As a key is depressed, the type font begins to move.
2. The type font stops when the selected character (indicated on the key) is in position to print.
3. A continued pressing of the key releases the hammer, which strikes the individual character on the face of the type.

Although the keyboarding (typing) process has been broken down into steps, these actually occur simultaneously. The operator is not conscious of the three stages. The only thing necessary to remember, and this soon becomes a habit, is to bottom each key. The machine does the rest.

## CONTROLLED IMPRESSION UNIFORM COVERAGE OF CHARACTERS

The next demonstration will illustrate how a VariType Machine images each character when a key is bottomed.

1. Insert paper in the machine and use the same type font (in active position).
2. Press the "n" key, slowly each time and all the way down, as follows:
  - a. Press it 3 times very lightly.
  - b. Press it 3 times a little harder.
  - c. Press it 3 times very hard.
3. Take the paper from the machine and examine each character for blackness.

Notice that the letter "n" printed with the same blackness all nine times, although different finger pressures were used to press the key.



This copy illustrates the results of a very important (integral) feature of all keyboard VariTyper Machines—the machine, and not the individual, controls how characters will print. This feature, called “*controlled impression*” insures that characters will print with the same blackness (have uniform coverage) regardless of how lightly or how hard a key is pressed to bottom it. It is important from the standpoint of keyboarding (typing) because it relieves an operator of the responsibility of having to try to press each key with the same pressure each time in order to obtain *uniform coverage* of characters.

There are several reasons why controlled impression is a feature which is found only on VariTyper Machines. One is that the metal hammer will not vary in hardness as can happen with a rubber platen on a typewriter. Another is that the entire type font is solid. Individual characters cannot be bent accidentally, as can happen with type bars. Therefore, *metal-to-metal* contact between the hammer and the type font eliminates the physical variations that can occur from a *metal-to-rubber* contact (i.e., the same character printing lighter when it hits a hard part of the rubber, and darker when it hits a soft part).

In addition to these built-in mechanical controls, VariTyper Machines use a one-time carbon ribbon so that a fresh area of ribbon is used for each character. Moreover, the manufacture of VariTyper ribbons is rigidly controlled to assure a uniform release of carbon for each character.

The resultant effect of the machine’s *controlled impression* and the use of the finest carbon ribbons available is *uniform coverage* of every character, every time a key is bottomed. And, uniform coverage is essential when composing copy for reproduction.

## VARIABLE IMPRESSION LEVER

The variety of types that can be used on a DS VariTyper Machine range in size from tiny to relatively large types and in weight from light to hold face. Consequently, different impressions (the force with which the hammer presses the paper against the type) are needed for the variance in size and weight of types. Therefore, the VariTyper Machine is equipped with a variable impression lever (2) which can be set for 10 different degrees of impression. Do not confuse the amount of impression, which is set

by the impression lever, with *controlled impression*. The impression lever is set according to the size and boldness of types, whereas controlled impression is the machine’s ability to maintain the degree of impression which has been set.

## SUGGESTED IMPRESSION SETTINGS

The below suggested impression settings are presented only to guide the operator in learning to select the proper impressions for the particular types with an individual machine.

1. Tiny light face types – Impression 1.
2. Small types, medium weight types – Impression 2 or 3.
3. Medium size types – Impression 4 or 5.
4. Large and bold types – Impression 6 to 10.

## VARIABLE SUPPRESSION LEVER

This lever *lessens* the “hammer blow” on all 2 increment characters thereby eliminating embossing. The suppression control lever for 2 increment characters (40) can be set for 8 different degrees of suppression. The impression lever (2) *must* be set before the suppression lever (40). Using the “trial method” start with the suppression lever set on “0” (which gives complete suppression). Type the word “lift” at each calibration until satisfactory coverage is obtained.

An operator quickly learns which impression and suppression to use by adjusting the levers until the copy looks sharp and black. To obtain uniform coverage of every character, an operator needs only to set the levers for the type being used, and to bottom the keys – *the machine will do the rest*.

## HOLD KEY

The hold key (3) is used to prevent the carriage from moving. This is especially helpful when using international language types that require accents above characters. It is used as follows:

1. Press and hold down the *hold key* while typing the character and accent.
2. Release the *hold key* and the machine will automatically space the number of increments the character requires.

## CAP SHIFT AND FIG SHIFT KEYS

The average type font has three rows of characters: lower case row (small letters), cap row (capital letters) and fig row (numbers, figures and symbols).

When the type is lowered in the anvil the characters on the lower case row will be in position to print.

Press **cap key (8)** to raise type to print a capital letter, and press **fig key (7)** to raise type to print a figure or symbol.

## CAP LOCK AND FIG LOCK KEYS

To lock the type font in position to print all capital letters or characters on the figure row, press **cap lock key (6)** or **fig lock key (5)** respectively. To unlock these keys press the cap key or fig key.

## LEFT MARGIN STOP AND MARGIN DIAL

The DS Machine is equipped with a left margin stop against which the carriage may be hanked, and an easy to use mechanical device, the **left margin dial (20)**. The main functions of the margin dial are (1) to act as a double check for starting points and (2) to aid in testing for alignment of left margin. Banking is done as follows:

1. Position the **left margin stop** on the margin scale as shown in Figure 23 (it will not necessarily be at the same position as shown in the picture).
2. Press **automatic carriage return and paper feed key (41)**. Carriage will automatically return to left margin position.
3. Set margin dial (20).
  - a. Turn **pointer (20c)** clockwise until it aligns with **vertical line (20a)** of the dial (Figure 23a). The **pointer (20c)** magnifies even the most minute movement of the carriage. It moves with the carriage *clockwise* when keys and space bar are pressed, *counterclockwise* when the carriage is hanked or back space keys are pressed.
4. Press the **automatic carriage return and paper feed key (41)** 3 or 4 times to assure that the left margin remains constant (this is easily done by observing the left margin dial for any change in its position). A  $\frac{1}{4}$  to  $\frac{1}{2}$  turn of the **margin stop adjuster knob (27b)** will "zero-in" the left margin (Figure 23b).

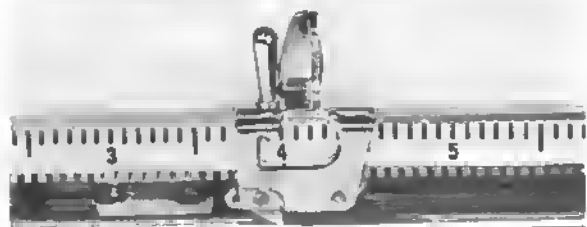


Figure 23

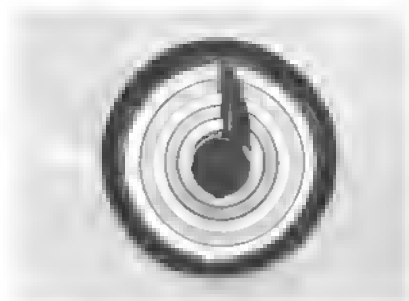


Figure 23a

5. For each successive line press **automatic carriage return and paper feed key** and the carriage will automatically return to the left margin position.
  - a. If for any reason it is necessary to go back over a line it can be accomplished by any of these 3 methods:
    - (1) Manually "pull" the carriage to the right until it "hanks" against the left margin stop.
    - (2) Reverse **line feed direction lever (23d)** (to eliminate paper feed) and press **automatic carriage return and paper feed key**.
    - (3) Disengage **line spacing device (23)** and press **automatic carriage return and paper feed key**.

## MARGIN DIAL POINTER

The pointer is "set" for the left margin starting point (line or entry farthest to the left on the paper) only once for each job; and, it must not be changed manually until the job is completed.

Setting the pointer is accomplished as follows:

1. Use right index finger to move **pointer (20c)** clockwise until its right edge is even with **vertical line (20a)** imprinted on face (20b) of margin dial. This vertical line should always be used as the starting point for the left margin of copy being composed.

**NOTE:** If, when setting the pointer, it is accidentally moved beyond the vertical line, continue moving it clockwise until it is correctly set. *Never* attempt to move the pointer backwards (counterclockwise) by hand.

2. Before engaging the line spacing device, check setting of pointer by pressing the **automatic carriage return and paper feed key**. Repeat setting procedure, if necessary.

\*The terms "set or setting" when used in reference to the margin pointer (20c) indicate the manual adjustment (moving it by hand) to establish the starting point for the left margin.

## AUTOMATIC CARRIAGE RETURN AND PAPER FEED KEY

The automatic carriage return and paper feed key (41) is designed (1) to return the carriage to a pre-set position on the margin scale (27) and (2) when the line spacing device (23) is engaged to advance the paper the number of points pre-set on the line spacing device.

## SPLIT SPACE BAR

The split space bar (11 & 11a) serves an important function. The *right* portion of the bar produces a two increment space for the spacing of words; the *left* portion spaces three increments for use in tabular work.

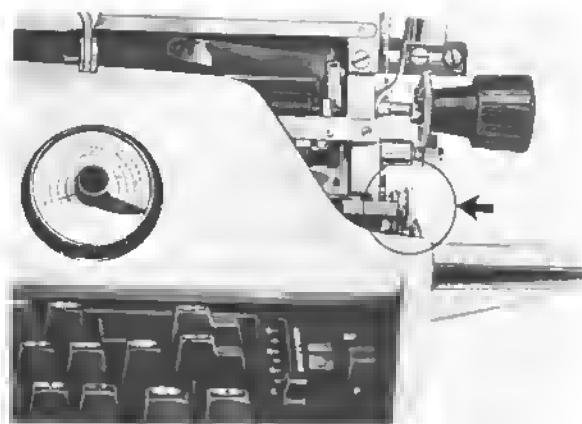


Figure 23b

## REMOVABLE TABULATION SCALE

The removable tabulation scale (Figure 24) is calibrated in units of 6 increments (each calibration is equivalent to 2 plotting units on the horizontal plotting scale (34) at each of the horizontal spacings). This removable tab scale simplifies the setting of tab stops as well as insuring accurate tabulation points. With this added feature, tab stops should be used whenever possible for accurate alignment. The **tabulation scale adjustment knob** (Figure 24a) is located on the right hand tab scale bracket. This knob must be "seated" in 1 of the 2 detent positions. Further explanation of its use on Page 50.

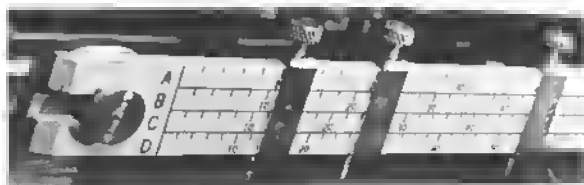


Figure 24

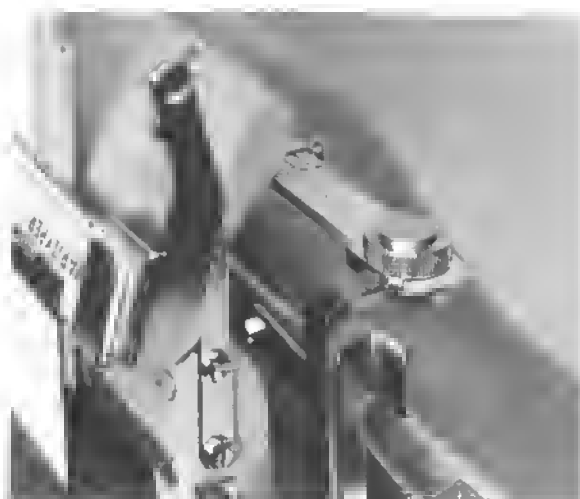


Figure 24a

## MARGIN STOP ADJUSTER KNOB (for Precise Adjustment of Left Margin)

The margin stop adjuster knob (27b) is located on the *right* end of the margin scale (27). This knob adjusts the left margin of copy. It has no effect on the tabular stops or the right (removable) marginal stop. It is used to:

1. Align left margin for consistent positioning.  
After obtaining the proper column width or after changing horizontal spacing, press the automatic carriage return and paper feed key 3 or 4 times to assure that the left margin remains constant (*this is easily done by observing the left margin dial or pointer on plotting scale for any change*). A  $\frac{1}{4}$  to  $\frac{1}{2}$  turn of the margin stop adjuster knob will "zero-in" the machine if the left margin varies.
2. Increase or decrease column widths when justifying copy.
  - a. To increase column width, turn the margin stop adjuster knob (Figure 23b) away from you.
  - b. To decrease column width, turn the margin stop adjuster knob (Figure 23h) toward you.

This adjuster knob can vary the left margin approximately 5 to 8 increments from *lock* to *lock*. If the adjustment needed is more than the present knob position will allow, move the left marginal stop one tooth to the right or left (*whichever is needed*) and readjust knob.

## JUSTIFIER OIAL ADJUSTER KNOB

At the *left* end of the margin scale is the **justifier dial adjuster knob (27a)**. It is used to:

1. Adjust the justifier dial pointer for exact column width when exactness within fractions of an increment is required.
2. Adjust the justifier dial pointer so that it aligns exactly on "0" of the scale.

This adjuster knob is used only when justifying copy. Further explanations of its use are detailed under "Automatic Justification", Page 55.

## MARKING STARTING POINTS ON THE OIAL

An ordinary pencil can be used to mark lines on the face of the dial for other starting points for copy such as indentions, columns of figures, etc.

Notice that the face of the dial has alternately shaded and clear rings. This has been done to facilitate coded marking systems (i.e., an operator can place marks in the various rings to indicate different sections on the paper). The coding system can be extended further by using various colored pencils.

## PRINT/NON-PRINT LEVER

The **print/non-print lever (16)** is used in the *non-print* position whenever carriage motion is desired, but not printing. This is especially helpful for paragraph indentions, centering headings or testing for column widths.

## PARAGRAPH INOENTIONS

Indentions on DS VariTyper Machines are expressed in terms of its carriage movements—increments or the amount of space the carriage moves when the increment space key is pressed. The number of increments to be used for paragraph indentions varies according to the format, column width, personal preference, etc. For straight text matter utilize the convenient tab scale and stops for indentions.

## COMPOSING COPY ON THE MACHINE

The information presented thus far has covered the basic settings of the machine. The operator is now ready to compose copy. Before proceeding, remember that the 720 VariTyper Machine is a "*composing machine*" to be used for preparing copy for duplicating. Begin now... strive first for *accuracy*... which will help to develop the necessary skills to become a creative, professional VariTyper operator.

## OIFF-STD-OUT LEVER

When using type fonts with identification numbers 600 or above this **diff-std-out lever (12)** *must* be positioned at "diff". When using type fonts with identification numbers under 600 it *must* be positioned at "std". To remove the coder (see Page 38) the lever *must* be positioned at "out".

## ASSIGNMENT

Complete exercises 1 through 5, in back of manual.

# TYPE SIZE AND LINE SPACING

## TERMS OF TYPE MEASUREMENT

In order to effectively use the many sizes of type that are available for differential spacing VariTyper Machines, an operator should have a basic understanding of "how types are measured" and of the relationship between "type size and line spacing".

A starting point is to become familiar with the terms used to describe line spacing and size of type. Although the reader may not recognize the first graphic arts term used to describe measurement of space for print styles of type, it is a measurement with which all typists are familiar. It is equivalent to one line space of a unit spacing typewriter. Standard typewriters write at six lines to the inch, down the page. If six typewritten lines occupy one inch of vertical space, one occupies 1/6 of an inch (Figure 25).

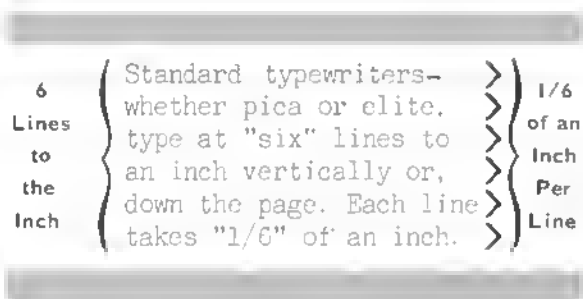


Figure 25

## THE PICA

This same unit of measurement for a typewriter line space (1/6 of an inch) is called a "pica" in the graphic arts industry. One pica equals 1/6 of an inch and six picas equal one inch. Picas are used to measure space down the page (vertically) as well as across the page (horizontally) as is illustrated below (Figure 26).

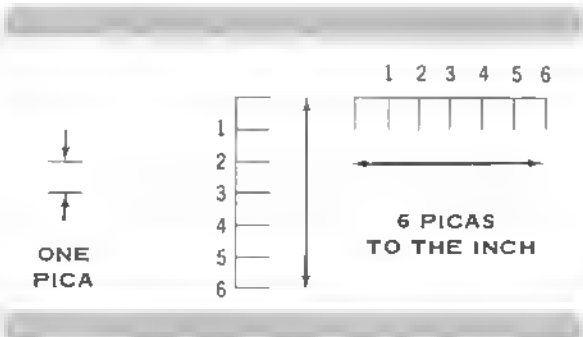


Figure 26

## THE POINT

The many styles of type also available for differential spacing VariTyper Machines vary greatly in size. Figure 27, below, shows only four of the sizes, but these will illustrate the purpose of this discussion. The copy was composed between rules spaced "one pica or 1/6 of an inch" apart. Only the largest type, to the far right, requires the full pica of line space. Obviously the smaller types can be set at closer line spacings. This is why the pica is further divided into smaller units called "points" which are used to measure both line spacing and type size. And, whenever the term "points" is used to describe line spacing or type size, the reference is always to *vertical space* and never to *horizontal space*.

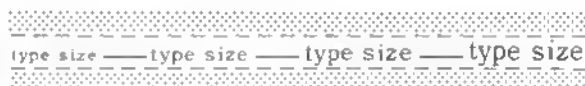


Figure 27

The point is a relatively small measurement—there are 12 points in a pica. To help the reader to visualize what is meant by points, the graphic illustration below (Figure 28) shows a pica divided into points, both actual size and magnified six times.

## THE PICA DIVIDED INTO POINTS

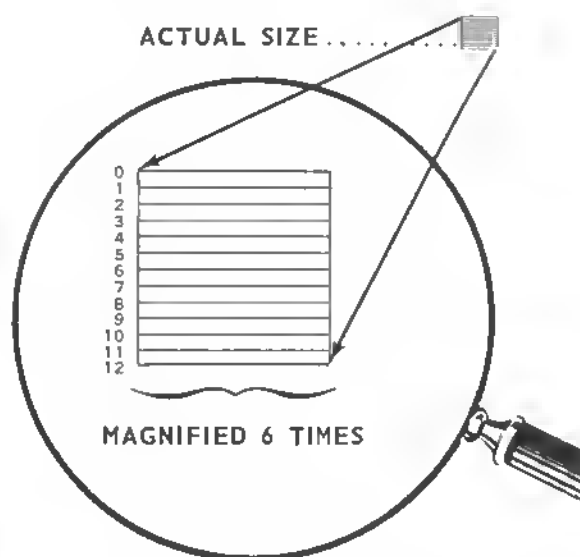


Figure 28

## CONVERTING INCHES INTO POINTS

A VariTyper operator will undoubtedly receive instructions for composing copy where the layout area is designated in inches. It will be necessary to convert the inches into points in order to compose the copy correctly. The numerical relationship between points, picas and inches is easy to learn. Keep in mind that points and picas are merely *units* which are used to measure distance, as are inches and feet. Points and picas are for smaller measurements.

It is simple to convert inches into points. There are 12 points in one pica, 6 picas in one inch, thus, 72 points in one inch. The following charts (Figure 29) will help in learning the relationship between points, picas and inches.

12 inches in a foot	◆	12 points in a pica
72 inches in 6 feet	◆	72 points in 6 picas

12 Points = 1 Pica	◆	12 Points = 1/6 of an Inch
6 Picas = 1 Inch	◆	1 Pica = 1/6 of an Inch
72 Points = 1 Inch	◆	1 Point = 1/72 of an Inch

Figure 29

## MEASURING TYPE AND LINE SPACING

### HOW TYPES ARE MEASURED

The *point size* for a type face is measured from the top part of the tallest letters to the bottom part of the letters which have tails extending below the base line. For all practical purposes, the size of a type face can be determined by measuring from the top of the letter "d" to the bottom of the letter "y" (Figure 30).

1. The stem of the letter "d" which extends above the round part of the letter is called an *ascender*.
2. The tail of the letter "y" which extends below the "v" part of that letter is called a *descender*.



Figure 30

## ASCENDERS AND DESCENDERS

The letters of "this type font" are shown in Figure 31. Complete the following exercise for learning which letters have ascenders or descenders. Then check to see if the answers agree with those at the bottom of this column.

1. Place a "dot" (·) above every letter that has an *ascender*.
2. Place a "dash" (—) below every letter that has a *descender*.

a b c d e f g h i j k l m  
n o p q r s t u v w x y z

Figure 31

The relationship between the style of type and the point size of type can be deceiving. The two styles (Figure 32) appear to be different in size. Actually, they are the same size for they require the same amount of vertical space. The reason for the deception is the "body" of the letters of the type to the left (a book style type) is smaller than the body of the letters of the type to the right (a newspaper style type).

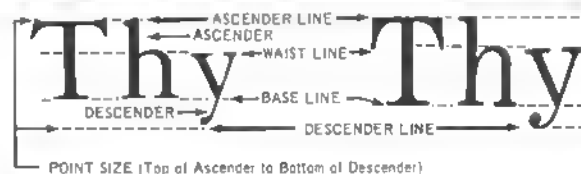


Figure 32

The illustration (Figure 33, Page 19) is six times larger than actual size. The graph represents the vertical space of *one pica* (divided into points), over which different sizes of type have been printed. In the space provided below each column write in the point size of the type. Check the answers against those at the bottom of the column.

### Answers to Figure 31:

Letters with ascenders: b, d, f, h, k, l, t  
Letters with descenders: g, j, p, q, v

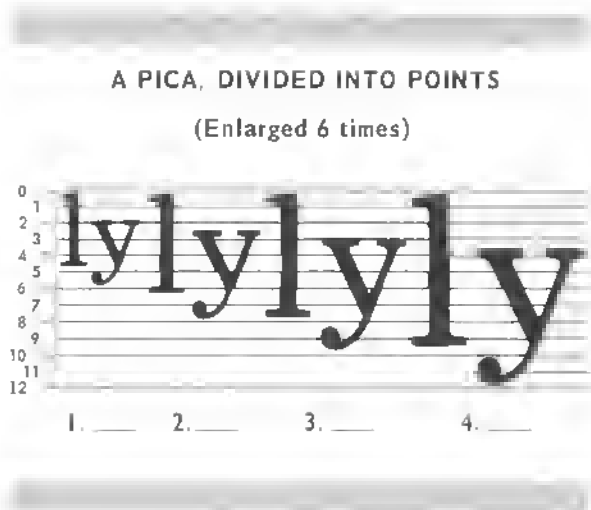


Figure 33

If any answers were incorrect, the following may be the reason. Notice that the descenders of each letter "y" do not touch the line directly below, which indicates the point size of the type. It is important to understand that although a type is given a *point value*, it will not measure this exact number of points from ascender to descender. If it did, and the same line spacing were used, then the descenders of letters on lines above would touch the ascenders of lines below.

The stated point size of a type represents only the *approximate* size of its face. Point size represents *specifically*—the minimum (closest) line spacing at which a type can be used when composing regular text copy, that is copy containing capital letters as well as lower case letters. All DS type fonts are designed in accordance with this principle, and allowance is made for sufficient white space between lines when the type font is used at its indicated point size.

## USING VARIOUS LINE SPACINGS

The following examples (Figure 34) illustrate basic relationships between *type size* and *line spacing*. Read the content within each block of copy. Incidentally, the same type was used for all three examples.

### Answers to Figure 33:

1. 6      2. 8      3. 10      4. 12

### Example 1

This block of copy was set using a 10 point type at 9 point line spacing. The lines are too close together. See how the descenders of the "p's" in line two touch the ascenders of the "l's" in line three. Circle other letters that touch.

### Example 2

This block of copy was set using a 10 point type at 10 point line spacing. There is just enough "white space" between lines so that letters on different lines do not touch. Writing copy at the closest line spacing is called "set solid".

### Example 3

This block of copy was set using a 10 point type at 12 point line spacing. See how this extra "white space" increases readability? Setting copy at a line spacing greater than the point size of a type is referred to as "leading".

Figure 34

## LEADING

The practice of adding extra white space between lines is called *leading*, because the printer (who sets metal type) actually places thin strips of "lead" (type metal) between the lines of metal type to produce the white space. The same result is achieved on the VariTyper Machine by the paper feed.

Directions for "leading copy" can be stated in various ways. If two points of white space is desired for copy set in a 10 point type it can be stated: "Set 10 on 12", "Set 10/12", "Set 10 pt., 2 pt. leaded", or the word "set" in each example could be eliminated without changing the meaning.

An apparent reason for adding extra white space between lines was illustrated in the third example (Figure 34). It increases the readability of the copy. In fact, the copy within this manual is set "10 on 12" or *leaded* two points, for this very purpose.

Another reason for using leading is one every typist has experienced—the need to take up more space on the page to create a more pleasing appearance. This may also be necessary for certain kinds of VariTyper composition.

A third reason for "leading" is shown below (Figure 35). The five lines of copy, to the left, begin and end at the same vertical positions as the six lines of copy to the right. This technique is frequently used in publications to have the columns end evenly at the bottom of a page. Leading is also used to achieve the same result for tabular and statistical copy.

Five lines of copy	Six lines of copy
Five lines of copy	Six lines of copy
Five lines of copy	Six lines of copy
Five lines of copy	Six lines of copy
Five lines of copy	Six lines of copy

Figure 35

The first lines of each block of copy are located on the same base line. In order to make them end on the same base line, line spacing for the remaining lines must be figured. The block of six lines is set at 10 point line spacing. Its remaining five lines will occupy 50 points of space. The remaining four lines of the five line block of copy must be leaded to equal 50 points. Therefore, 50 points divided by 4 lines equals 12½ points per line.

## MEASURING LINE SPACINGS

On occasion an operator may be requested to match the type size and line spacing of a published article which may or may not have been composed on a VariTyper Machine. Usually the size of the type can be determined by comparing the sample to the "run-offs" in the DS Type Font Book (which is available at all VariTyper Sales Offices).

Many types of scales or gauges are available for measuring line spacings, including the one manufactured especially for VariTyper copy—the VariTyper Line Spacing Scale (described on Pages 22 and 23). The method for measuring *line spacing* is universal for all types of copy. Line spacing is measured from "base line to base line"—from the base line of one line (above) to the base line of the next line (below) as shown in the following sample (Figure 36).

↓	Line spacing of copy is al-
↓	ways measured from base
↓	line to base line. Several
↓	lines should be measured to
↓	obtain a proper reading. The
↓	SAME HOLDS TRUE FOR
↓	ALL CAP COPY AS WELL.

Figure 36



## LINE SPACING IN POINTS

The basic operation of the DS VariTyper Machine's line spacing device (23) is presented on page 9. However, this information purposely did not include the fact that the line spacing device spaces in *points* until the relationship between *points*, *type size*, and *line spacing* had been covered.

The reader can now appreciate the versatility of the line spacing device (Figure 37) in meeting the exacting line spacing requirements for virtually any kind of printing job.

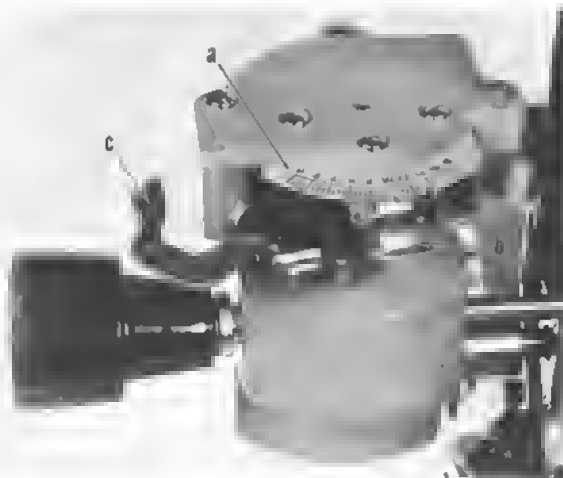


Figure 37

The dial (23a) of the line spacing device is calibrated in half-point graduations, between "0" and "18". The point indicator (23b) can be set to feed paper from  $\frac{1}{2}$  to 18 points of space (Figure 38) with a single movement of the line spacing lever (23c):

Minimum and Maximum Amount of Line Spacing  
for Each Movement of the Line Spacing Lever

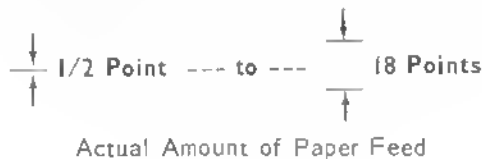


Figure 38

The VariTyper system for line spacing is simple to use. The *point size* of a type is listed on the type font. To *set solid* the point indicator is placed at this setting. To add *leading* between lines: add the size of the type to the desired amount of leading and set the point indicator on the line spacing device dial accordingly.

## AUXILIARY LINE SPACING

The DS VariTyper Machine has an auxiliary line spacing device that uses a variety of changeable gears, each of which is specially notched to produce a "set" line spacing. A VariLine gear (28) is slipped over the shaft of the right end of the feed roll and is secured on the shaft by the right feed roll knob (24) (Figure 39).

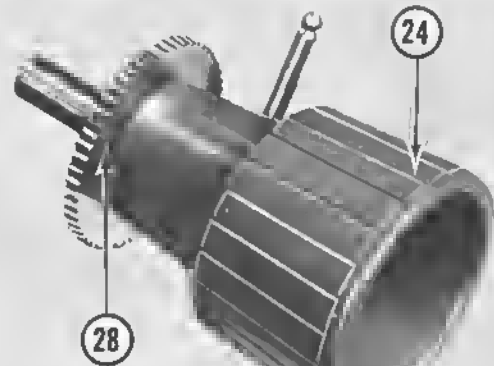


Figure 39

**NOTE:** The line spacing device and a VariLine gear must *never* be engaged at the same time!

## USING A VARILINE GEAR

1. Press detent lever (behind gear) down, so it swings freely. This allows the tension spring to press and settle in the gear notches.
2. Turn right feed roll knob correct number of clicks for desired line spacing. For example, the 4 point gear feeds paper 4 points per click. Therefore, it takes 2 clicks for 8 points and 3 clicks for 12 points, etc.

## CHANGING VARILINE GEARS

1. Remove right feed roll knob, turning it clockwise, while holding the large feed roll or left feed roll knob with the left hand.
2. Change gears and replace right feed roll knob making sure to tighten it to prevent slipping.

## ADDITIONAL VARILINE GEARS

The DS Machine comes equipped with a "4" point gear. VariLine gears are available for the following "set" line spacings: 2 pt., 4 pt.,  $5\frac{1}{2}$  pt., 6 pt., 7-14 pt.,  $7\frac{1}{2}$  pt.,  $8\frac{1}{2}$  pt., 9 pt.,  $9\frac{1}{2}$  pt., 10 pt., 11 pt., and 13 pt.



### Examples — Using a Straight Edge on the Gauge

Problem 1 — Determine line spacing to fit 12 lines of copy in 10 picas.

1. Align a straight edge with 10 on the 12 scale and 20 on the 6 scale. Top of straight edge forms a horizontal line across the scales.
2. Follow top of straight edge and find a scale that reads "12".
3. Look at top of that scale and read its heading. It reads "10". Therefore, any type 10 points or smaller can be used if set at 10 point line spacing.

Problem 2 — Find vertical depth for 24 lines set at 8 point spacing.

1. Use 8 point scale and locate its 24th graduation.
2. Place top of straight edge at this mark and adjust until it is aligned across the scales (it aligns with 16 on the 12 scale and 32 on the 6 scale). Therefore, copy will take 16 picas.

Problem 3 — Find depth (in picas) for 17 lines of copy, set in 12 point type, leaded 2 points (line spacing will be 14 points).

Note that there is no "14" point spacing scale. However, the 7 point scale can be used by multiplying the number of copy lines by 2 ( $17 \times 2 = 34$ ). The 17 lines at 14 point line spacing will measure 34 on the 7 point scale.

1. Use 7 point scale and locate its 34th graduation.
2. Place top of straight edge at this mark and adjust until it is aligned across the scales. This time it does not lie exactly on graduations of the 12 and 6 scales. However, by moving the straight edge down slightly and aligning it with the closest graduations of the 12 and 6 scales (20 on the 12 and 40 on the 6) it shows that the closest line depth, in terms of picas is approximately "20" picas. Although these calculations do not come out exactly on a pica mark this is usually close enough for most copyfitting problems.

### MEASURING A LAYOUT OR COPY WITH THE GAUGE

#### MEASURING LAYOUTS

If a rough or finished layout is furnished, the gauge may be placed on the various printing areas and used to measure them as has been shown by using a straight edge. The horizontal lines of the layout will show through the slits between the scales (Figure 42).

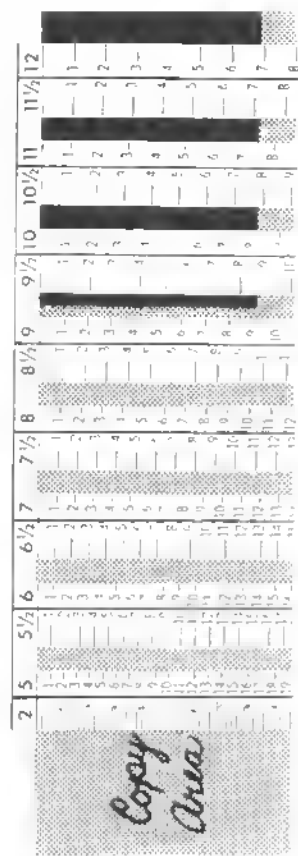


Figure 42

Notice in Figure 42 that the copy area measures 8 picas deep and the black insert, for a picture, measures 7 picas. If the column width, character count and number of copy lines has been determined, the line spacing to be used can be established in this same operation.

#### MEASURING LINE SPACING OF COPY

Certain publications contain information, the bulk of which is not "dated" and the original composition can be used by making a few changes. If the line spacing at which the copy was set is not known, it can be determined by placing the gauge on the copy. This also applies to measuring the line spacing of Varityper copy or copy set in "hot type" which has been printed.

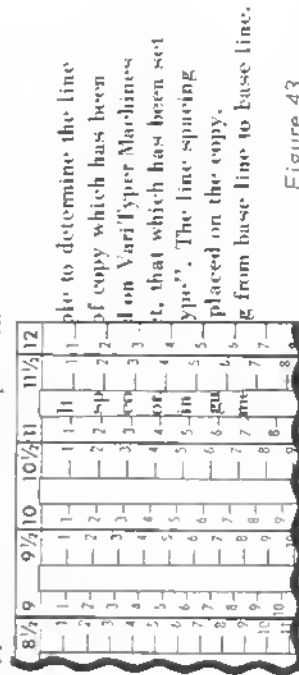


Figure 43

Notice that the seven lines of copy (Figure 43) are set at 11 point spacing. This was determined by aligning the first graduation of the various scales with the base line of the first line of copy until the proper scale was found: i.e., the base lines of subsequent lines will align with line spacing graduations of the scale.

# DIFFERENTIAL SPACING

The term *differential spacing* (often abbreviated "DS") refers to the kind of letter spacing on DS VariTyper Machines. Alphabet characters vary in width and the DS machine automatically spaces out each character to its proper design width. A wide character like the "m" occupies more space than a narrow character like the "i" (Figure 44). DS types follow closely the alphabet's original design, resulting in a pleasing professional appearance of typography which compares favorably to printing (hot) type.

## DIFFERENTIAL SPACING



Figure 44

The examples below (Figure 45) show unit and differential letter spacing.

UNIT SPACING	DIFFERENTIAL SPACING
mmmmmmmmmm	mmmmmmmmmm
aaaaaaaaaaaa	aaaaaaaaaaaa
iiiiiiiiiii	iiiiiiiiiii
m a i m	m a i m
unit spacing	differential spacing

Figure 45

## INCREMENTS

The width of each character is listed in small divisions called "increments". Each character on DS type fonts takes either two, three, or four increments depending upon its design.\*

The DS VariTyper Machine automatically spaces each character to its proper width as the keys are pressed. However, it is advantageous to know increment values of characters to compose certain types of copy. The reasons will be explained in other sections of the manual.

The VariTyper 720 is equipped with a split space bar (11 and 11a). The right portion of the bar produces a two increment space for the spacing of words; the left portion spaces three increments for use in tabular work.

\*The exception to this is the 5000 Series type fonts which are used in a special non-justifying VariTyper Machine 519). This machine and its types space characters at 1, 2, 3 and 4 increments.

## LETTERSPACING

Letterspacing is the amount of space between each letter of a word, either for legibility or to fill a certain desired area. This "letterspacing" is accomplished by placing an extra increment or increments between characters and words.

## INCREMENT VALUES — ENGLISH

The increment values of most of the characters of the DS keyboard can be memorized almost instantly just by reading the following rules.

### RULES FOR LEARNING INCREMENT VALUES

#### Lower Case Row (lower case letters) —

- Most lower case letters take 3 increments.
- The m and w take 4 increments.
- The f, i, j, l, r and t take 2 increments.

Make the exceptions easy to learn by arranging them to form a man's name: "wm lift jr".

#### Cap Row (upper case letters or capitals) —

- Most capitals take 4 increments.
- The J and S take 3 increments.
- The I takes 2 increments.

Make the exceptions easy to learn by substituting the slang term "JIS" for the word "JUST".

#### Fig Row (numerals and symbols) —

- All numerals take 3 increments.
- Most symbols that are used with numerals, #, \$, €, @ and / also take 3 increments.
- Except ¼, ½, ¾, % and &; which take 4 increments.

#### Punctuation Keys —

- Punctuation , . ; : ' ' ( ) - ! take 2 increments.
- The \* ? & take 3 increments.
- The — (em dash) takes 4 increments.

#### Split Space Bar —

- Right portion takes 2 increments.
- Left portion takes 3 increments.

#### Forward Space and Back Space Keys —

- 1-Inc. space key takes 1 increment forward.
- 1-Inc. back space key takes 1 increment back.
- 3-Inc. back space key takes 3 increments back.

#### Machine at STD Setting for "Unit Spacing" —

- Most keys and both portions of the space bar take 3 increments.
- 1-Inc. space key takes 1 increment forward.
- 1-Inc. back space key takes 1 increment back.

The increment value of characters of the DS Machine's keyboard are also presented in the form of a chart (Figure 46):

INCREMENT CHART — ENGLISH

ROW	2 Increment	3 Increment	4 Increment
L.C.	l i f t j r ., ; -	a b c d e g h k n o p q s u v x y z	m w
Cap	1 ., . !	J S	(All capitals except I-J-S)
Fig	, . ' ' ( ) S ¢ @ # ? * f i l £ /	1 2 3 4 5 6 7 8 9 0	% - & ¼ ½ ¾

Right portion of Space Bar—2 increments

Left portion of Space Bar—3 increments

Figure 46

**ASSIGNMENT**—Complete Exercise 6 "Learning Increment Values" in back of manual.

## UNIT SPACING TYPE FONTS

In addition to the differential spacing machines, VariType Corporation manufactures "unit spacing" machines which allot equal space for each character across the page. Many users have both classes of machines. If desired, "unit spacing" type fonts may be used in a DS machine. Simply switch the **diff-std-out lever (12)** to its "std" position. This changes the DS machine's character spacing to *units* and gives the following approximate number of characters (per inch) for these horizontal spacings: "13 at A, 14 at B, 16 at C and 18 at D". The characters in the phrase "l i f t j r" and *punctuation* are controlled by the **suppression control lever (40)**, thus eliminating embossing. The **impression lever (2)** must be set before the **suppression control lever (40)**. The lever must be returned to its "DIFF" position when using DS fonts.

All VariType type fonts are identified by style number. Unit spacing fonts have numbers below 600. DS fonts have style numbers 600 and above.

## THE DS SCALE AND ITS USE

A very useful operator aid is the *DS Scale* (Figure 47) provided with each DS VariType Machine. It can be used for the following purposes:

1. To measure the width of illustrations and copy area for "run-arounds" or indentions.
2. To measure the number of increments in a word or phrase composed on a DS Machine.
3. To determine which horizontal spacing was used to compose VariType copy.
4. To obtain an exact justified column width.
5. To find the increment count of characters on the DS keyboard (type fonts).

The DS Scale is made up of four sections:

1. Its top edge is an ordinary 6 inch ruler, marked off in sixteenths of an inch.
2. Its bottom edge is a *pica rule* (36 picas long) with half pica graduations.
3. Its right end contains an *increment chart* for the increment values of the DS keyboard.
4. Its middle section consists of four *increment scales*, one for each of the machine's four horizontal spacings. Each small division of these scales equals two (2) increments. Every tenth increment is numbered and indicated by a longer graduation line.

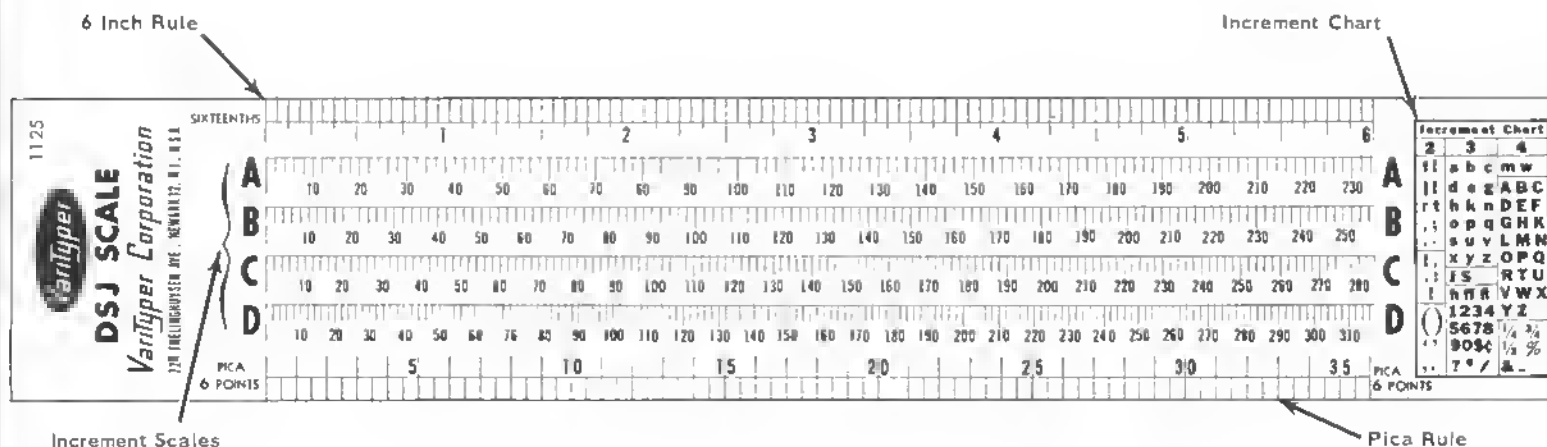


Figure 47

## DETERMINING INCREMENT COUNTS FOR A SPECIFIED COLUMN WIDTH

Increment counts for columns can be quickly determined by using these steps:

1. Align long edge of "3 x 5" card with *ruler or pica rule* (according to measurement given).
2. Slide card, aligning its *right edge* with number for column width. This forms a vertical line through the scales and shows number of

increments for each horizontal spacing.

For example, a "3 x 5" card is aligned with the three inch mark of the ruler (Figure 48). Its right edge shows the increment values for the four horizontal spacings – 117 at A, 128 at B, 142 at C and 158 at D.

Try several practice readings for all four scales at 4, 3½ and 2 inches; 20, 17 and 22½ picas.

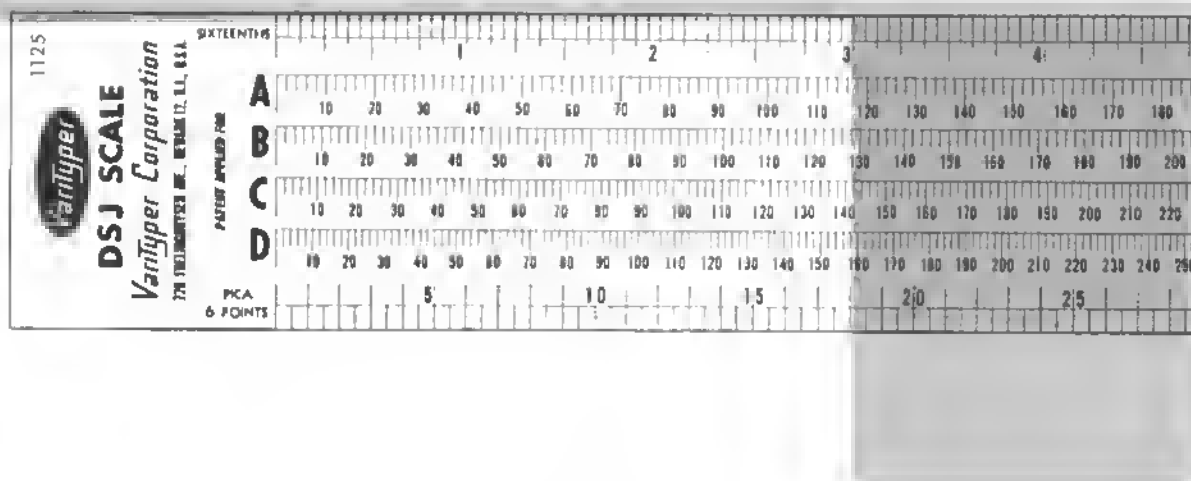


Figure 48

## DETERMINING WHAT HORIZONTAL SPACING WAS USED TO COMPOSE COPY

To find the horizontal spacing that was used to compose VariType copy, use these steps:

1. Choose a short word which totals an even number of increments (i.e., 10, 12, etc.).
2. Place the DS Scale on copy so the "zero" line of a scale (A, B, C or D scale) touches the left side of the first letter of the word. When the scale for the correct horizontal spacing is found, the right side of the last letter in the word will just touch the line indicating the word's total increment count.

If the word does not fit any of the scales, the copy was probably photographically reduced or enlarged.

A word within the block of copy, in examples "A and B" of Figure 49, is to be selected and measured to determine the horizontal spacing at which the copy was composed. After reading the following steps use a DS Scale and repeat the procedure.

1. The word "may" takes 10 increments – 4 for the "m", 3 for the "a" and 3 for the "y".
2. Example A shows that "may" measures less than 9 increments on the "C" scale.
3. Example B shows that "may" measures exactly 10 increments on the "D" scale, so the copy was set at "D" spacing.

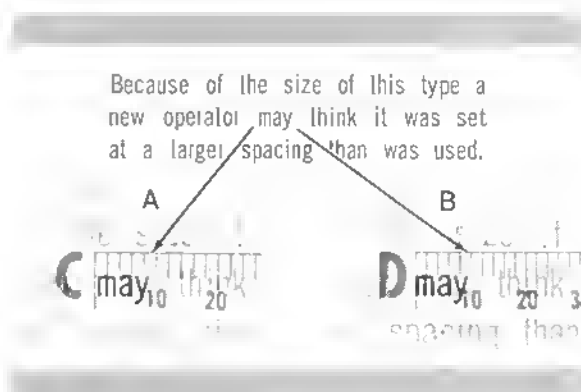


Figure 49

## DETERMINING WHICH HORIZONTAL SPACING TO USE TO COMPOSE COPY

The DS Scale can also be used to determine what horizontal spacings can be used for a job when the copy and the copy area are known. For example, the rough draft of the form below (Figure 50) is to be composed as shown. Upon examining the form, an operator will immediately see that the type for the headings must be chosen so that the word "QUANTITY" will fit in its allotted space. The other headings will fit regardless of which spacing is used.

The following steps were used to determine what horizontal spacing(s) could be used for composing the copy.

1. Count the number of increments in the word

"QUANTITY" set in all caps. It contains 30 increments.

2. Place the scale on the copy so the "zero" line of the four increment scales are even with the left rule of the column.
3. Read the number of increments indicated by the right column rule. The scales read: 29 at A spacing, 32 at B spacing, 35 (plus) at C spacing and 40 at D spacing.

The word would not fit in the column using an A spacing type. B spacing is also too wide, for a minimum of 2 increments should be placed between a vertical rule and the edge of a character. Therefore, the column must measure at least 34 increments for a type to fit. Either C or D spacing types will work.

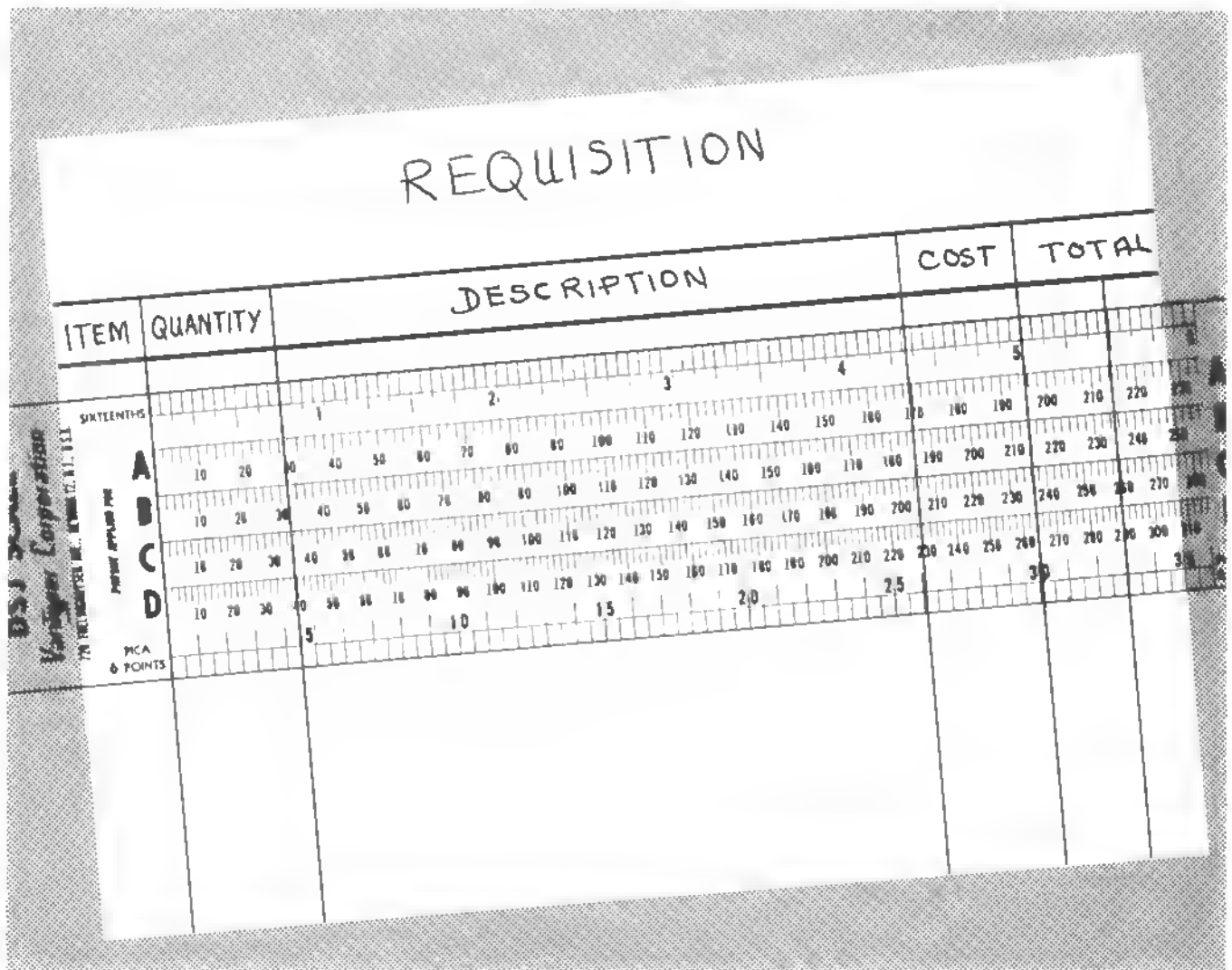


Figure 50

# RIBBON CHANGING INSTRUCTIONS

(The #1259 Ribbon Threader permits quick and easy changing of ribbons and shields)

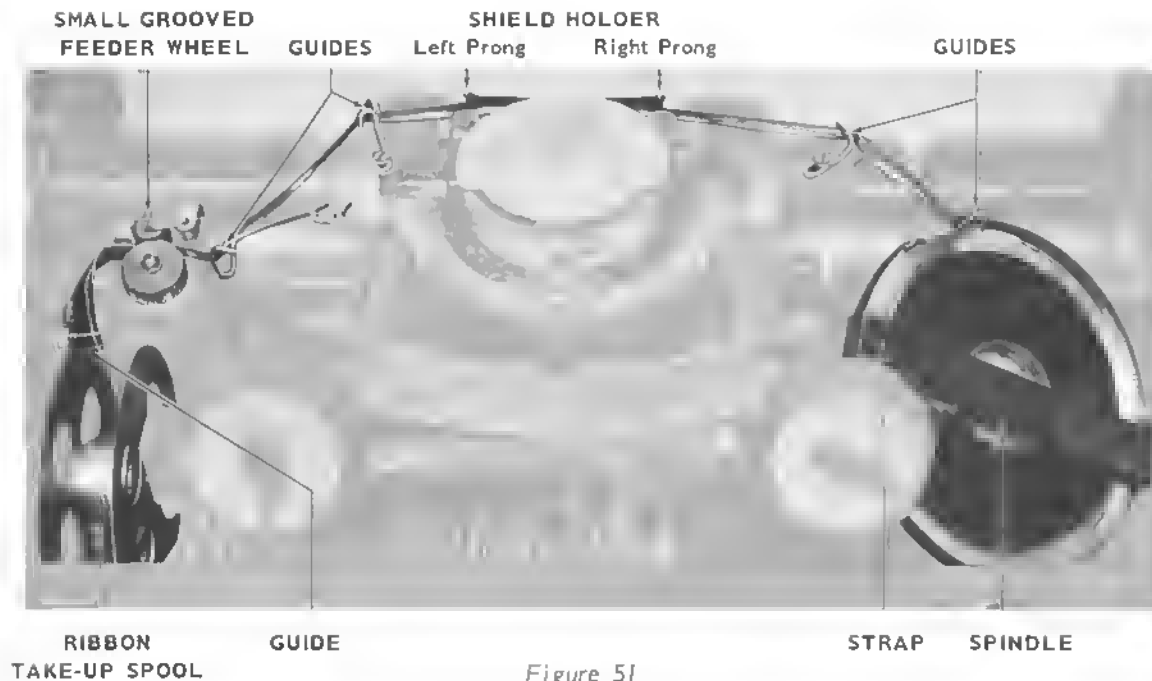


Figure 51

## RIBBON THREADING INSTRUCTIONS

1. Lift metal strap holding the ribbon on the spindle. Remove empty ribbon core.
2. Place ribbon on spindle as shown in Figure 51. Note direction of ribbon feed from spool.
3. Remove shield from holder.
  - a. Press right holder to left.
  - b. Lift shield from prongs using #1259 Ribbon Threader hook (Figure 52).
4. Inspect shield—if dirty, clean it and if damaged, replace it with a new one.
5. Replace shield.
  - a. Slip left loop of shield over left prong of shield holder.
  - b. Hold right side of shield with Ribbon Threader hook.
  - c. Press right shield holder to left and slip right loop over right prong.
  - d. Make certain that shield is completely down on prongs.
6. Thread ribbon through right guides.
7. Hold Ribbon Threader with hook at left, hook facing down (Figure 52).
8. Slide Ribbon Threader, threading slot first, left to right through ribbon shield.
9. Thread ribbon, with carbon side away from

operator, through slot in threader.

10. Using Ribbon Threader, pull ribbon through ribbon shield and first left guide.
11. Press back and hold the small tension roller and place the ribbon between the tension roller and the feeder wheel.
12. Thread ribbon through remaining guides.
13. Slide ribbon in slot in left side of take-up spool, carbon side toward operator. Leave about one inch of ribbon hanging out to the left.
14. Hold open small tension roller and turn right side of spool (top away from operator or counterclockwise) about four turns to wind a few inches of ribbon.

## REMOVING TAKE-UP SPOOL

1. Hold right side of spool with right hand.
2. Turn left side of spool with left hand (away from operator) until it stops.
3. Pull spool to the left to remove.

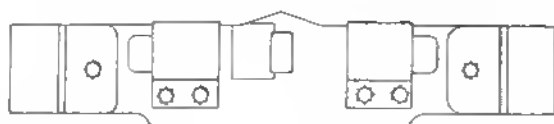
## ASSEMBLING TAKE-UP SPOOL

1. Place left side of spool on shaft and push toward right side of spool until it stops.
2. Hold right side of spool.
3. Turn left side of spool with left hand (toward operator) until it snaps into place.

Figure 52

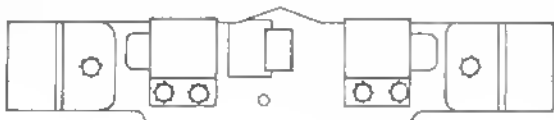


## VARITYPER RIBBON SHIELDS



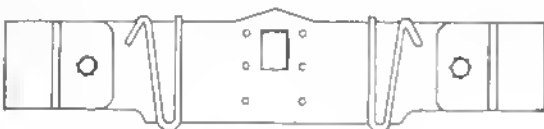
#1410 — CARBDN PAPER AND VARICLEAR RIBBON SHIELD for use on all Differential Spacing machines and all Unit Spacing machines except VariTyper Branding Machine and Unit Spacing machines below Serial No. 517007.

*NOTE: The opening in shield #1410 is narrower than the opening in #1415.*

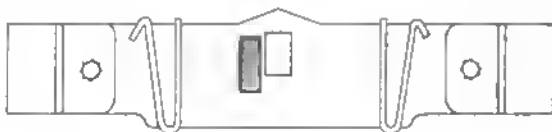


#1415 — CARBDN PAPER AND VARICLEAR RIBBON SHIELD for use on VariTyper Branding Machine and all Unit Spacing machines below Serial No. 517007.

*NOTE: The opening in shield #1415 is wider than the opening in #1410.*



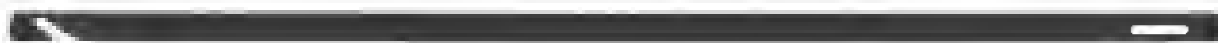
#1420 — CLDTH RIBBON SHIELD for use with silk ribbon or heavily inked cotton ribbon on Engineering Lettering Machine and other VariTyper machines equipped with a cloth ribbon mechanism.



#1425 — CLDTH RIBBON SHIELD for use on all Unit Spacing and Differential Spacing machines equipped with a cloth ribbon mechanism.

Check the ribbon shield every time a ribbon is replaced. The shield may be damaged if dirt or shield marks appear on the copy. There should be available to all operators an adequate supply of shields. We suggest an on-hand inventory of 6 to 12 shields at all times. This will prevent a break in production through accidental damage to the shield. Since ribbons are also necessary for production there should always be at least a dozen on hand. All VariTyper Carbon Ribbons have an indefinite shelf life. Therefore, they can be purchased in large quantities with no danger of deterioration.

The Ribbon Threader permits quick and easy changing of ribbons and shields. For detailed instructions on the use of the ribbon threader and instructions for removing and replacing shields see Page 28.



Ribbon Threader #1259

WHEN ORDERING SPECIFY NUMBER AS WELL AS NAME OF SHIELD

# CARE OF VARITYPER MACHINES

The quality of the final copy produced on the VariTyper Machine is dependent to a great degree upon the care given the machine.

## WHEN MACHINE IS NOT IN USE

1. Open feed rolls (platens, when subjected to continuous pressure on a small area have a tendency to develop flat spots).
2. The VariTyper 720 "on-off" switch should be off when not in use.
3. Set the impression control lever at 1.
4. Remove type fonts from machine and place in type font drawer (owner's option).
5. Lower anvil.
6. Cover machine at night or when not being used for any long period of time.

## CLEANING MACHINE AND TYPE

1. Clean feed rolls at least once a week. Lack of frequent cleaning may cause slippage of paper, inaccurate alignment, unevenness of feed rolls and other unsatisfactory conditions.
2. Clean type fonts and anvil as often as necessary, using a soft cloth.
  - a. Clean back of type thoroughly with a cloth. (Most dirt on a type collects on the back.) Never soak types in alcohol or other cleaning agents.
  - b. Insert card stock in anvil slot. Run it back and forth in slot several times and around on sides of anvil.
  - c. Turn anvil around and clean other side in same manner. (A sheet of paper folded twice may be substituted for card.)
  - d. Clean outer surface of anvil with cloth.

**PRECAUTION:** When replacing types in type drawer, place them carefully in slot. Careless handling may cause damage to web and result in type "sticking" in anvil; or worse yet, damage beyond repair. If type sticks in anvil after both anvil and type are perfectly clean, contact VariTyper Service Representative. Do not attempt to bend or adjust type.

3. Clean paper basket by wrapping cloth around end of split wooden roller and pushing it through basket.

4. Reach behind paper table and wipe alignment guides with cloth.
5. Clean ribbon shield as often as required to assure top performance of the machine.
  - a. If shield becomes damaged around window opening, replace with new shield. A damaged shield may cause frequent ribbon breakage, shield marks around letters, incomplete characters, or carbon flaking on copy.
6. Use a type brush and clean both wheels of carbon ribbon feed. A dry brush will usually clean the wheels sufficiently. Hold a piece of paper under wheels while cleaning to prevent carbon from dropping into machine.

## MECHANICAL INFORMATION

All VariTyper 720 Machines are equipped with a continuous drive motor. Make certain that the machine is plugged into an electrical outlet and that the "off-on" switch is "on" when machine is being used. When the switch is on, the horizontal spacing and on-off indicator window (17) is illuminated.

VariTyper 720 Machines will operate on AC current *only*. They are available in 115 Volts, 60 Hz; 115 Volts, 50 Hz; 230 Volts, 60 Hz; and 230 Volts, 50 Hz. When ordering it is imperative that the voltage and frequency are specified.\*

VariTyper Machines to be used near electronic equipment may have the motors "shielded" to eliminate interference with other equipment.

## CIRCUIT BREAKER

All 230 volt machines will be equipped with a **circuit breaker**. This circuit breaker is installed on machines to protect the motor. In the event of an overload on the motor the "red" reset button (located behind the on-off switch) will "trip" out. The circuit breaker may be reset by pushing in the "red" reset button after a short interval for cooling. If the breaker trips again after resetting, a VariTyper Service Representative should be consulted.

\* "Hz" (Hertz) is new terminology for "cycle".

# CAPITAL HEIGHT CHART

TYPE	CAP HT PTS DEC	TYPE	CAP HT PTS DEC	TYPE	CAP HT PTS DEC	TYPE	CAP HT PTS DEC
600-12A...8	.110	690-10D...7	.100	875-7D...5	.072	1060-8C...5½	.078
600-10B...7	.098	690-8D...6	.081	880-12A...8	.109	1060-6D...4½	.063
600-8C...6	.081	692-13A...9½	.134	880-10B...6½	.094	1065-10B...7	.094
600-7D...5	.071	692-10D...7	.100	880-8C...5	.071	1065-8C...5½	.078
601-10B cap 7	.099	692-8D...6	.081	880-6D...4½	.060	1065-6D...4½	.063
sm cap 5	.069	700-10B...7	.097	885-10B...6½	.094	1070-12A...8½	.117
605-10B...7	.099	710-10B...7	.098	885-8C...5	.073	1070-10B...7	.094
605-8C...6	.083	720-10B...7	.100	890-12A...8½	.116	1070-8C...5½	.078
605-7D...5	.071	730-10B...7	.102	890-10B...7	.097	1080-10A...7	.100
610-9B...6	.085	740-10C...7	.099	890-8C...5½	.078	1080-9B...6½	.090
610-7½C...5½	.076	740-8D...6	.081	900-10C...7	.100	1090-12A...8	.114
615-9B...6	.083	770-10A...7	.100	910-12B...9	.122	1090-10B...7	.096
615-7½C...5½	.076	770-8B...6	.081	920-10B...7	.095	1090-8C...5½	.079
620-12A...7	.098	770-6C...4½	.062	920-8C...6	.086	1090-7D...5	.073
620-10B...6	.087	775-10A...7	.100	925-10B...7	.096	1095-10B...7	.096
620-8C...5½	.077	775-8B...6	.082	930-10D...7	.101	1095-8C...5½	.079
620-7D...5	.069	775-6C...4½	.062	940-12A...7	.096	1095-7D...5	.073
625-10B...6	.087	780-12A...8	.108	940-10A...5	.074	1100-12A...8	.114
625-8C...5½	.076	780-10B...7	.098	950-10B...7	.099	1100-10B...7	.096
625-7D...5	.071	780-8C...6	.083	970-12B...8½	.116	1100-9C...5½	.079
630-12A...8	.108	790-12A...8½	.117	970-10B...7	.101	1100-7D...5	.073
630-10B...6½	.090	790-10B...7	.099	980-10B...7½	.104	1105-10B...7	.096
630-8C...5	.072	790-8C...6	.081	1000-12A...8	.110	1105-8C...5½	.079
630-6D...4½	.060	795-12A...8½	.115	1000-10B...7	.098	1105-7D...5	.073
635-10B...6½	.089	795-10B...7	.097	1000-8C...5½	.078	1110-12A...8	.110
635-8C...5	.073	795-8C...5½	.078	1005-10B...7	.098	1110-10B...7	.095
635-6D...4½	.060	800-13A...6½	.090	1005-8C...5½	.078	1110-8C...5½	.079
640-9B...6	.085	800-12A...6	.085	1010-12A...8	.109	1110-6D...4½	.063
640-7½C...5½	.077	800-11A...5½	.080	1010-10B...6½	.095	1115-10B...7	.095
650-10B...7	.095	800-10B...5½	.080	1010-8C...5½	.079	1115-8C...5½	.079
650-8C...5	.072	800-9B...5½	.075	1010-7D...5	.072	1115-6D...4½	.063
650-6D...4½	.062	800-8B...5	.070	1015-10B...7	.095	1120-12A...8	.110
655-10B...7	.095	800-7C...5	.070	1015-8C...5½	.079	1120-10B...7	.095
655-8C...5	.073	800-6C...4½	.065	1020-12A...8	.106	1120-8C...5½	.079
660-12A...8½	.116	800-5C...4½	.060	1020-10B...6½	.090	1120-6D...4½	.063
660-10B...7	.100	800-4D...4½	.060	1020-8C...5½	.080	1125-10B...7	.095
660-8C...6	.081	810-3D...4	.055	1030-12A...8	.114	1125-8C...5½	.079
660-7D...5	.072	810-2D...3½	.050	1030-10B...7	.095	1125-6D...4½	.063
665-10B...7	.100	820-12A...6	.086	1030-8C...5½	.078	2000-13A cap 6½	.090
665-8C...6	.081	820-10A...7	.098	1030-7D...5	.069	sm cap 6	.085
665-7D...5	.073	830-10B...7	.097	1035-10B...7	.097	2000-12A cap 6	.085
670-12A...8½	.117	835-10B...7	.098	1035-8C...5½	.079	sm cap 5½	.080
670-10B...7	.100	840-12B...7½	.103	1040-12A...8	.112	2000-11A cap 5½	.080
670-8C...6	.081	850-10C...6½	.089	1040-10B...7	.095	sm cap 5	.075
670-7D...5	.072	850-8D...5	.072	1040-8C...5½	.077	2000-10B cap 5½	.080
675-10B...7	.100	855-10C...6½	.091	1050-12A...8	.111	sm cap 5½	.075
675-8C...6	.081	860-10C...7	.095	1050-10B...7	.095	sm cap 5	.070
675-7D...5	.072	870-12A...8½	.117	1050-8C...5½	.076	2000-9B cap 5½	.075
680-12A...7	.095	870-10B...7	.100	1050-7D...4½	.064	sm cap 5	.070
680-10B...6	.086	870-8C...6	.081	1055-10B...7	.095	2000-8B cap 5	.070
680-8C...5½	.076	875-10B...7	.100	1055-8C...5½	.076	sm cap 4½	.065
680-7D...5	.067	875-8C...6	.081	1060-12A...8½	.117	2000-7C cap 5	.070
681-10B cap 6	.086	885-10C...6½	.091	1060-10B...7	.094	sm cap 4½	.065
sm cap 4½	.065					2000-6C cap 4½	.065
681-8C cap 5½	.075					sm cap 4	.060
sm cap 4	.057					2000-5C cap 4½	.065
685-10B...6	.083					sm cap 4	.055
685-8C...5½	.076					2000-4D cap 4½	.060
685-7D...5	.067					sm cap 4	.055
690-13A...9½	.134					2000-3D cap 4	.055
690-12A...8½	.119					sm cap 3½	.050
690-11C...8	.110					2000-2D cap 3½	.050
						sm cap 3	.045
						2010-11A cap 6	.086
						sm cap 5	.067

Figure 53

## COMPARISON OF CAP AND POINT SIZE OF TYPES

Boxed or column heads are usually set in caps. To center these vertically between rules, the height of capital letters must be known. Cap height has no relationship to point size of types. Note that the capital letters of the two ten point types (Figure 54) are not the same height. In order to simplify vertical centering of headings (set in all caps) the capital face heights of all DS type fonts have been measured and are listed in numerical order in the *Capital Height Chart* (Figure 53).



Figure 54

# PLOTTING AND COMPOSING PRE-RULED FORMS

There are various reasons for a company to use pre-ruled forms on which the fill-in copy will be composed at a later time. Many of the previously explained techniques for composing forms can be applied to composing pre-ruled forms.

The copy to be composed on pre-ruled forms will fall into two classifications; that outside the ruled areas—*exterior addenda*, and copy within the rules or boxes—*boxed entries*, whether it is headings or data. The instructions for plotting and composing these two types of copy will be treated separately.

## PLOTTING EXTERIOR ADDENDA

The VariTyper operator should use a light blue (non-reproducing) pencil to mark the center points of headings, sub-headings or other data requiring centering. These entries can then be composed using the centering scale. If vertical positions of these entries have not been indicated (i.e., so many points from the top of the paper or below a rule, etc.) it will also be desirable to mark the base lines for copy as guides for aligning when composing.

## PLOTTING BOXED ENTRIES

Plotting procedures for boxed entries will depend, in part, upon the operator's use of the gunsight and plotting scale, or the point of the ribbon shield.

### HORIZONTAL PLOTTING

The most frequently used method for centering copy horizontally between vertical rules is the combination of the point of the shield and blind typing. This composition method does not require horizontal plotting and will be explained under the composing steps.

#### Use of the Horizontal Plotting Scale

If a job is frequently repetitive it may be desirable to use the horizontal plotting scale and record the plotting information for future use. The horizontal plotting scale is used in the same manner as described in the section on Plotting and Composing Forms. It is laid on the pre-ruled form and the positions for vertical rules marked. If the form contains sections which have vertical rules at different positions, colored pencils can

be used to mark the plotting scale as a "code" to the sections.

### VERTICAL PLOTTING

Vertical plotting for centering headings or data between rules requires measuring and recording the space between horizontal rules. Although the depth between rules may be indicated in the rough draft, it is best to check a few of the boxes to insure the correctness of the calculations. The VariTyper Line Spacing Scale (Cat. No. 1155) shown on Page 22, or any other scale suitable for measuring points, can be used to determine the point depth between rules.

To center boxed headings on pre-ruled forms use the methods described in the following section, "Centering Headings Vertically Between Rules".

### ALIGNING THE FORM

The pre-ruled form can be aligned in the machine by using an alignment guide and a horizontal rule, or the shield point and a vertical rule.

### HORIZONTAL CENTERING

The following are suggested methods for centering copy horizontally, listed in order of operator preference.

#### Horizontal Centering—Using the Shield Point

1. Move carriage until point of ribbon shield rests exactly on starting point of column.
2. Engage non-print lever and blind type heading.
3. Then use "m's" and increment space key to bring point of shield exactly on right vertical rule of column.
4. Count the number of "m's" and increments used to fill out remaining space of column.
5. Return carriage so point of shield aligns with starting position.
6. Blind type half the number of "m's" and increments it took to fill out the column.
7. Space in two (2) more increments. Remember, DS types print approximately 2 increments to the left of the position indicated by the point of the shield.
8. Pull non-print lever to "P" position and type heading. It will be centered.

These same steps will be used for centering each heading within its column.

### **HORIZONTAL CENTERING—Using the Plotting Scale**

This is accomplished as follows:

1. Move carriage until point of ribbon shield rests exactly on first vertical line or left margin of form.
2. Space in 2 increments (DS types print approximately 2 increments to left of point of ribbon shield) to bring carriage to proper position for aligning plotting scale.
3. Align plotting scale with gunsight at this position and tighten securely.
4. Center entry using plotting scale, gunsight and non-print lever (explained, Page 42).

**NOTE:** Moving in the two increments from left margin or any line and aligning plotting scale eliminates having to space in two increments to center each heading.

### **VERTICAL CENTERING**

The plotting and composing methods for centering headings vertically between rules are described in detail on Pages 34 & 35. These methods will be used for centering headings on pre-ruled forms.

Since the rules have already been composed or pre-printed, the VariTyper operator must find the proper vertical position to compose the headings or other data. This procedure is also covered in the section on Plotting and Composing Forms (Page 43) and describes the use of an alignment guide in finding the correct vertical position on a page.

#### **USE OF ALIGNMENT GUIDE**

The method of using alignment guides to determine where base line of characters will print has been covered previously (Page 11). To review, since the base line for rules and letters are the same an operator who has a VariTyper Machine without a ruling device can find the relationship of the alignment guide to base lines of letters instead

of rules by the following method:

1. In margin area of form (outside area which will print) type 10 capital letter "X's".
2. Move carriage until *left* alignment guide is directly below these letters.
3. Bring paper forward against alignment guide to determine relationship between top of alignment guide and base line (bottom) of "X's" (exactly on top edge of alignment guide, slightly above, or below it).
4. Free roll paper and approximate this same position with alignment guide to base line of top heading rule desired and engage line spacing device.
5. Compose according to plotting steps.

**NOTE:** If top of left alignment guide does not lie exactly on base line of characters this can be properly adjusted by an authorized VariTyper Service Technician.

### **VERTICAL PAPER FEED**

When plotting the vertical spacing for copy on the pre-ruled form, the operator should have checked to determine if the rules were accurately constructed and measured the proper distance apart. If the measurements were accurate the line spacing device can be engaged and used for the vertical spacing without having to align the paper guide with the base line of each rule.

### **PRE-RULED TABULAR FORMS**

When composing fill-in copy for pre-ruled tabular forms, the beginning points for the horizontal entries can be marked on the plotting scale or on the left margin dial.

#### **ASSIGNMENT**

Horizontally center headings in pre-ruled boxes (Exercise 7 in back of manual). At this time vertical centering within the boxes need not be perfect.

# CENTERING HEADINGS VERTICALLY BETWEEN RULES

Forms composition usually requires that certain copy be centered vertically between rules that extend horizontally above and below the copy. Regardless of the type of copy to be centered between rules, the steps are basically the same:

1. To determine the amount of space between the rules (usually indicated on rough copy).
2. To determine the amount of space required for the copy (the point size of the type, if copy is set in caps and lower case; or the cap height if all caps are used).
3. To distribute the space left over (above and below the copy) between the tops and bottoms of letters and their respective rules.

The kind of copy which most frequently requires vertical centering between rules is headings. Therefore, this section of the manual will describe the steps for centering boxed headings. After this process is learned, an operator will find it simple to use the same basic steps for centering any other type of copy between rules.

## BOXED HEADINGS

Boxed headings may consist of one or more words on one line, or one or more words on several lines. Since they are usually set in all caps the operator can refer to the Capital Height Chart (Page 31) to determine the amount of space a heading will take (Figure 55).

ITEM		
NET COST PER UNIT		
SUGGESTED RETAIL PRICE		

Figure 55

The choice of rules to enclose the headings may vary from light weight to heavy weight, or may be parallel rules. The amount of space occupied by rules which are less than one point need not be considered when centering headings. The treatment of rules occupying one point or more of vertical space will be covered after the method of centering headings between light weight rules has been explained.

Generally, the easiest method of distributing the white space above and below the headings is to divide it equally. This is called mathematical

centering. However, when calculations indicate that an extra half point of white space is available, this extra space should *always* be added below the heading. In fact, some forms designers specify that a half point or full point more space always be placed below headings than above to *optically* center headings between rules.

## CENTERING SINGLE LINE HEADINGS BETWEEN LIGHT WEIGHT RULES

After determining the amount of space between rules and the cap height of the heading type, the operator can use the following formula.

### EXAMPLE I

#### FORMULA - Centering Single Line Headings

1. Total points between rules  
MINUS
2. Cap height of type (in points)  
GIVES
3. White space left over for centering heading.
4. Distribute white space equally above and below heading.

#### PLOTTING STEPS (Applying Formula)

1. Total points between rules, 18 points  
MINUS
2. Cap height of 660-8C type, 6 points  
GIVES
3. White space for centering headings, 12 points.
4. Mathematical distribution of white space; 6 points above and 6 points below heading.

#### COMPOSING STEPS

1. Construct top heading rule (use any rule that occupies less than 1 point of vertical space).
2. Add together: cap height (6 points) and white space above heading (6 points)—then feed paper this amount (12 points).
3. Compose heading.
4. Feed paper distance for white space below heading (6 points).
5. Construct bottom heading rule.

### FINISHED COPY

HEADING MATHEMATICALLY CENTERED

## EXAMPLE 2

Whenever calculations show that an extra half point of white space is available, it should be placed below the heading.

### PLOTTING STEPS (Applying Formula)

1. Total points between rules, 18 points  
MINUS
2. Cap height of 1000-8C type,  $5\frac{1}{2}$  points  
GIVES
3. White space for centering heading,  $12\frac{1}{2}$  points.
4. Distribution of white space comes out, 6 points above and  $6\frac{1}{2}$  points below heading.

The composing steps will follow the same procedure as those listed in example one.

### FINISHED COPY

PLACE EXTRA WHITE SPACE BELOW HEADING

## CENTERING MULTIPLE LINE HEADINGS

The methods for centering multiple line headings vertically between rules are basically the same as those for centering single line headings. The additional steps to determine the amount of space needed for a multiple line heading are:

1. Number of entry lines in the heading.
2. Cap height of each entry line.
3. White space (leading) between entries.

If the white space between entries within the heading is not specified, the operator will determine what leading to use. A minimum of 2 points of leading must be allowed between entry lines regardless of how small a heading type is used. It is also desirable to allow even more than 2 points of leading for headings set in bold types, or for types having cap heights 6 points or higher.

### FORMULA - Centering Multiple Line Headings

1. Total points between rules  
MINUS
2. Space required for heading;  
a. cap heights of each entry  
- plus -  
b. leading between entries  
GIVES
3. White space left over for centering heading.
4. Distribution of white space, divided evenly above and below heading.

## EXAMPLE 3

### PLOTTING STEPS (Applying Formula)

1. Total points between rules, 24 points  
MINUS
2. Space required for heading, 15 points;  
a. Two line heading using 810-12A type (cap height, 6 points) will occupy 12 points of space.  
- plus -  
b. 3 points leading between entries  
GIVES
3. White space left over for centering the two line heading: 9 points (24 points minus 15 points).
4. Distribution of white space,  $4\frac{1}{2}$  points above and  $4\frac{1}{2}$  points below heading.

### COMPOSING STEPS

1. Construct top heading rule (use any rule that occupies less than 1 point of vertical space).
2. Add: cap height of first entry line (6 points) to white space above multiple line heading ( $4\frac{1}{2}$  points) and feed paper this amount ( $10\frac{1}{2}$  points).
3. Compose first entry of multiple line heading.
4. Add: cap height of second entry (6 points) and leading between entries (3 points) and feed paper this amount (9 points).
5. Compose second entry of heading.
6. Feed paper distance for white space below heading ( $4\frac{1}{2}$  points).
7. Construct bottom heading rule.

### FINISHED COPY

### VERTICAL CENTERING OF MULTIPLE LINE HEADINGS

The 12 points of white space for the above heading could have been distributed:

1. 4 points above the first entry.
2. 4 points between 1st and 2nd entry lines.
3. 4 points between 2nd entry line and bottom rule. Shown below:

### VERTICAL CENTERING OF MULTIPLE LINE HEADINGS

### ASSIGNMENT

Horizontally and vertically center headings in boxes (Exercise 7 in back of manual).

## USING DIFFERENT WEIGHTS OF RULES FOR BOXED HEADINGS

When centering boxed headings between rules one point or heavier allowance must be made for the amount of vertical space (thickness or weight) the rule below the heading occupies. The illustration (Figure 56) shows the same heading composed between three weights of rules which are spaced 12 points apart (from base line to base line). The first heading is centered between one half point rules: One point and two point rules, respectively, were used for the second and third headings. They are not centered headings because allowance was not made for the weights of their bottom rules.



Figure 56

The bottom or lowest part of all rules is on the same level, or on the same base line. The vertical space (weight) taken up by a rule extends above its base line (Figure 57). Notice in this illustration that the base line of the rules is the same as that for other characters on the font.

When allowing for the vertical space taken-up by rules heavier than one point, calculations must include *only* the weight of the rule *below* the heading. This is necessary because line spacing for VariTyper copy is measured from the base line of the line above, to the base line of the next line below. Therefore, the measurement of space between rules begins at the bottom of the top rule and its weight does not affect the amount of space between rules. However, since the weight of a rule extends above its base line, the vertical space occupied by the bottom rule will reduce the amount of space between the two rules and must be allowed for to correctly center headings.



Figure 57

## POINT HEIGHTS OF RULES

To assist the operator in allowing the correct amount of vertical space for rules, the following chart (Figure 58) lists the space allotment for rules available on DS type fonts.

## VERTICAL SPACE ALLOTMENT FOR RULES

POINTS	NAME AND SAMPLE OF RULE
0	hairline _____, 1/2 point _____, 3/4 point _____
1	1 point _____
1 1/2	1 1/2 point _____
2	2 point _____, double hairline _____
3 1/2	Scotch _____, _____

Figure 58

## ALLOWANCE FOR WEIGHT OF RULES

When the rule below boxed headings occupies one or more points of vertical space, these additional steps should be followed:

1. Number of points between heading rules (measured from base line to base line).  
MINUS
2. Space (in points) occupied by bottom rule  
GIVES
3. Total available space between the rules for heading and white space (from base line of top rule to top edge of bottom rule).

## EXAMPLE 4

### PLOTTING STEPS (Applying Formula)

1. Number of points between rules (base line to base line), 24 points  
MINUS
2. Space occupied by bottom rule, 2 points  
GIVES
3. Total available space between rules for heading and its white space, 22 points  
MINUS
4. Cap height of 810-12A type, 6 points  
GIVES
5. White space for centering heading, 16 points.
6. Distribution of white space (evenly), 8 points above and 8 points below heading.

### COMPOSING STEPS:

1. Construct top heading rule (2 point rule).
2. Add together: cap height of type (6 points) and white space above heading (8 points) — then feed paper this amount (14 points).
3. Compose heading.
4. Add together: white space below heading (8 points) and weight of bottom rule (2 points) so rules will be correct distance apart — then feed paper this amount (10 points).
5. Construct rule below heading.

FINISHED COPY

## HEADINGS BETWEEN HEAVY RULES



# TYPE FONTS WITH SEGMENTS

A VariTyper "segment type font" (Figure 59) is one that contains extra characters on a metal strip which has been fused to the center of the type font.

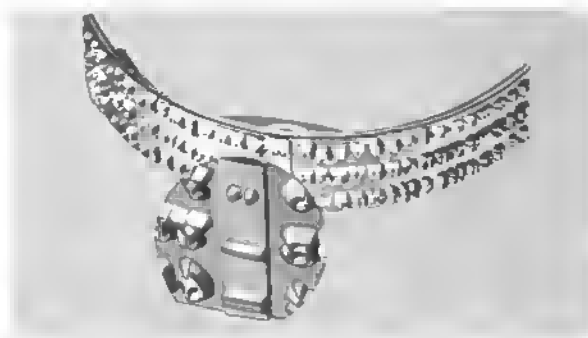


Figure 59

The *segment* produces rules (lines that connect) or leaders (dots or hyphens)—depending on which characters are on the segment—for forms, tabular or statistical copy, etc. Figure 60 illustrates the various segments and the types of rules or leaders each produces. At the end of each specimen is the name or point size of the rule or leader. Orders for segment type must include the style and size of type and the segment's Roman numeral identification.

**NOTE:** Segment VI contains the authorized rules for U.S. Army and Air Force forms. Segment VII contains the authorized rules for Navy forms.

## CHARACTER POSITIONS ON SEGMENTS

The characters on a segment are located in the same positions as the characters on a type font. They are respectively: top character, lower case row; middle character, cap row; and bottom character, fig row. Characters on segments also align on the same baseline with characters on the type, with the exception of Segment XIII which has hyphen high leaders in all three positions.

## FORMS MECHANISM

To use segment types a VariTyper Machine must be equipped with a forms mechanism (built into the machine at time of manufacture). The **forms key (9)** activates the hammer to produce an image. *Completely* depress forms key for consecutive strokes. *Partially* depress forms key for individual strokes. Each stroke of the mechanism moves the carriage 3 increments, or one unit on the horizontal plotting scale.

## SELECTING SEGMENTS

The selection of ruling segments is a matter of personal preference. It should be pointed out, however, that when ordering segments for leader line copy the single dot leader has two advantages over the double dot leader. First, it can be used at all four horizontal spacings. Second, single dot leader line copy will be less likely to fill-in (appear to connect) when photographically reduced.

## SEGMENTS FOR DS TYPE FONTS

I	<div> <div>..</div> <div>—</div> <div>==</div> </div> <div> <div>.....</div> <div>.....</div> <div>.....</div> </div> <div> <div>Dot Leaders</div> <div>Hairline</div> <div>Parallel Rule</div> </div>	II	<div> <div>—</div> <div>—</div> <div>==</div> </div> <div> <div>.....</div> <div>.....</div> <div>.....</div> </div> <div> <div>Hyphen Leaders</div> <div>Hairline</div> <div>Parallel Rule</div> </div>	III	<div> <div>—</div> <div>—</div> <div>==</div> </div> <div> <div>.....</div> <div>.....</div> <div>.....</div> </div> <div> <div>1/2 Point Rule</div> <div>1 Point Rule</div> <div>2 Point Rule</div> </div>
IV	<div> <div>—</div> <div>==</div> <div>==</div> </div> <div> <div>.....</div> <div>.....</div> <div>.....</div> </div> <div> <div>Hairline</div> <div>Scotch Rule</div> <div>Scotch Rule</div> </div>	V	<div> <div>..</div> <div>—</div> <div>—</div> </div> <div> <div>.....</div> <div>.....</div> <div>.....</div> </div> <div> <div>Dot Leaders</div> <div>Hairline</div> <div>Blank (tabbing)</div> </div>	VI	<div> <div>—</div> <div>—</div> <div>==</div> </div> <div> <div>.....</div> <div>.....</div> <div>.....</div> </div> <div> <div>Hairline</div> <div>3/4 Point Rule</div> <div>1 1/2 Point Rule</div> </div>
VII	<div> <div>—</div> <div>—</div> <div>==</div> </div> <div> <div>.....</div> <div>.....</div> <div>.....</div> </div> <div> <div>Hairline</div> <div>1 1/2 Point Rule</div> <div>1 Point Rule</div> </div>	VIII	<div> <div>.</div> <div>.</div> <div>.</div> </div> <div> <div>.....</div> <div>.....</div> <div>.....</div> </div> <div> <div>Dot Leader</div> <div>Dot Leader</div> <div>Dot Leader</div> </div>	IX	<div> <div>.</div> <div>—</div> <div>==</div> </div> <div> <div>.....</div> <div>.....</div> <div>.....</div> </div> <div> <div>Dot Leader</div> <div>Hairline</div> <div>Parallel Rule</div> </div>
X	<div> <div>..</div> <div>..</div> <div>..</div> </div> <div> <div>.....</div> <div>.....</div> <div>.....</div> </div> <div> <div>Dot Leaders</div> <div>Dot Leaders</div> <div>Dot Leaders</div> </div>	XI	<div> <div>.</div> <div>..</div> <div>—</div> </div> <div> <div>.....</div> <div>.....</div> <div>.....</div> </div> <div> <div>Dot Leader</div> <div>Dot Leaders</div> <div>Hairline</div> </div>	XIII (B Spacing Only)	<div> <div>—</div> <div>—</div> <div>—</div> </div> <div> <div>.....</div> <div>.....</div> <div>.....</div> </div> <div> <div>Hyphen Leader</div> <div>Hyphen Leader</div> <div>Hyphen Leader</div> </div>
XV (B Spacing Only)	<div> <div>.</div> <div>..</div> <div>—</div> </div> <div> <div>.....</div> <div>.....</div> <div>.....</div> </div> <div> <div>Dot</div> <div>Double Dot</div> <div>Triple Dot</div> </div>	XVII	<div> <div>.</div> <div>—</div> <div>==</div> </div> <div> <div>.....</div> <div>.....</div> <div>.....</div> </div> <div> <div>Square Dot</div> <div>Hairline</div> <div>Parallel Rule</div> </div>	XVIII (B Spacing Only)	<div> <div>—</div> <div>—</div> <div>==</div> </div> <div> <div>.....</div> <div>.....</div> <div>.....</div> </div> <div> <div>Double Dash</div> <div>1 Point Rule</div> <div>2 Point Rule</div> </div>

Figure 60

## ENGLISH AND INTERNATIONAL LANGUAGE CODERS

The DS VariTyper Machine has a special device which controls the spacing (increment values) of each key of the keyboard. It is called a *coder* and it can be removed from the machine. The English coder is used for the majority of English type fonts.

The basic alphabets of most international languages vary to such an extent that they cannot be adapted to the same increment pattern as English types. Therefore, international language coders are available to change the keyboard spacing to accommodate various language types.

When ordering types, check with your local VariTyper branch sales office to determine if a coder is required, and which coder to order. Refer to the latest edition of the DS type book for proper coder specifications. Different sizes and styles of types are available in approximately sixty languages.

### CODERS TO MEET SPECIFIC NEEDS

In addition to the many international language coders there are other coders available which greatly increase the scope of VariTyper Machine composition. Some type designs require a different arrangement of letter widths such as Cap and Small Caps, Copperplate Gothic and Univers.

One popular series of cap and small cap types is the Copperplate Gothic series, known also as the 2000 series. There are 12 sizes of this design, 3 sizes in each of the four horizontal spacings, and each type has 2 sizes of capital letters.

These types are ideal for forms composition. The smaller sizes are especially popular because they enable more copy to be fit into a small amount of space.

Other cap and small cap types are available for Roman styles such as Bodoni Book and Garamond. These designs are popular for programs, column headings on price lists and other tabular material, business cards, and a variety of special uses.

When using the Cap and Small Cap Coder, the large capitals take the same number of increments as the capitals of any English type — 4 increments, except for I, J and S. The small capitals, however, take 3 increments — except I (2), and W and M (4 each). Thus, copy composed in small capitals requires less space than that composed in the large capital letters.

### REMOVING THE CODER

1. Move Diff-Std-Out lever to "Out" position.
2. Open cover.
3. Lift "bails" that rest on coder.
4. Lift out coder, using the curved brackets on each side of coder (Figure 61).

### INSERTING THE CODER

1. Place coder in machine. Press down on curved brackets until it snaps into position. If this is not done unit spacing will result.
2. Drop bails over coder.
3. Close cover.
4. Move Diff-Std-Out lever to "Diff" position.

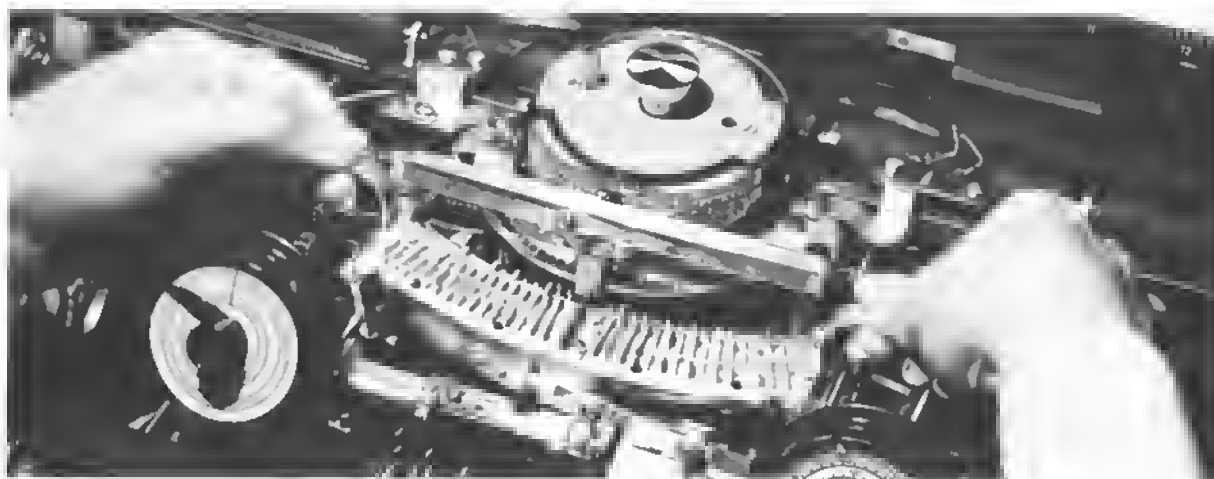


Figure 61

## FORMS PLOTTING AND COMPOSING

A form is a printed or typed document with blank spaces for insertion of information. It is made up of type and rules.

The scope of forms preparation is divided into four categories:

1. *Forms Analysis*—resolves what information goes on the form.
2. *Forms Design*—continues the analysis until it resolves how to best arrange and present the information.
3. *Forms Plotting*—translates the form's design into machine functions.
4. *Composing*—mechanical operation of the machine to produce the master copy.

The first two are procedures usually performed by specially trained personnel or by the originator of the form. The third area may become the duty of the VariTyper operator, and the fourth is the operator's responsibility.

When plotting a form, it is important to follow the originator's design. Any questions concerning the

rough draft should be answered before completing the plot. However, when it is apparent that the originator is not familiar with the machine's operation or its type selection, it may be necessary for the operator to suggest methods to simplify the form's composition.

A form should be plotted to conform with the most prevalent horizontal spacing of type used on the form. Fill-in type forms, for instance, utilize small types in order to provide adequate writing space. Consequently, most of these kinds of forms are plotted for "C" or "D" spacing.

The simple form shown below (Figure 62) was designed to accommodate either handwritten or typewritten entries. Typewriter line spacing was maintained to enable a typist to align the form for the first fill-in line without further adjustment to complete it.

This section will describe the basic steps for "plotting and composing" forms and will include a few fundamentals concerning forms design.

### SPARE PARTS

NUMBER	ITEM	DESCRIPTION	PRICE

Figure 62

## HORIZONTAL PLOTTING

Plotting horizontal positions for margins, copy, column rules, etc., of forms is accomplished by using the **horizontal plotting scale (34)**. It is a "ruler type" scale which has graduations called "plotting units" printed on its four edges. Each plotting unit is equivalent to 3 increments of space, and those on each edge (scale) are calibrated to correspond with *one* of the horizontal spacings on the machine "A and B" scales on one side, "C and D" on the other.

The system uses the plotting scale for plotting and composing. It is removed from the machine, placed on the rough draft and marked to indicate the positions of margins, rules, etc. When replaced in the machine it serves as a guide for properly positioning the copy on the paper. The following steps were used to plot the form shown in Figure 62.

1. Loosen thumb screw and remove **horizontal plotting scale (34)** from machine.
2. Place it on rough draft so its "C" edge is toward top of form and align 50 mark with left margin of form (Figure 63). Form is 110 "C" units wide ( $160 - 50 = 110$ ).
3. Mark scale to indicate following:
  - a. Left margin (starting point) — 50.
  - b. Vertical rules — 64, 78, 140, 154.
  - c. Right margin (stopping point) — 160.
  - d. Center of form is at unit  $105 - (50 + 160 = 210; 210 \div 2 = 105)$ .
4. The title "SPARE PARTS" is to be set in 670-12A type. Since the form will be composed at "C" spacing, rather than change to "A" spacing to compose the title, write it at "C" spacing, and manually insert 2 increments between letters (called letter spacing) and put 6 increments between words.

## VERTICAL PLOTTING

Vertical spacing will be accomplished by using the **line spacing device (23)**. The following steps illustrate how the vertical spacing was plotted.

1. Top rule is to be 12 points below the form's title "SPARE PARTS".
2. Medium weight rules above and below boxed headings are 2 picas (24 points) apart.
3. Boxed headings are to be centered vertically between the rules.
  - a. The boxed headings are all caps. To find amount of vertical space they take, refer to Capital Height Chart (Page 31) which shows 660-8C's cap height is 6 points.
  - b. Type takes 6 of the 24 points of available space leaving 18 points "white space" to be distributed above and below headings. Allow 9 points above and below headings.
    - (1) Headings will be composed 15 points below top rule ( $6 + 9 = 15$ ).
    - (2) Bottom boxed heading rule will be constructed 9 points below headings.
4. Remaining 10 rules (for writing lines) will be light weight (hairline or  $\frac{1}{2}$  point rules) spaced 24 points apart.

## SELECTING RULING SEGMENTS

To compose rules automatically on a VariTyper Machine equipped with a ruling mechanism, a type font containing a ruling segment must be used. The different segments which are available and instructions for their use are on Page 37.

The boxed heading rules are to be medium in weight. Segments III, VI and VII have medium weight rules. Raise font to cap position for segment III or VI, and to fig position for segment VII. The remaining rules below are light weight. All three segments are used in the lower case position for these rules.

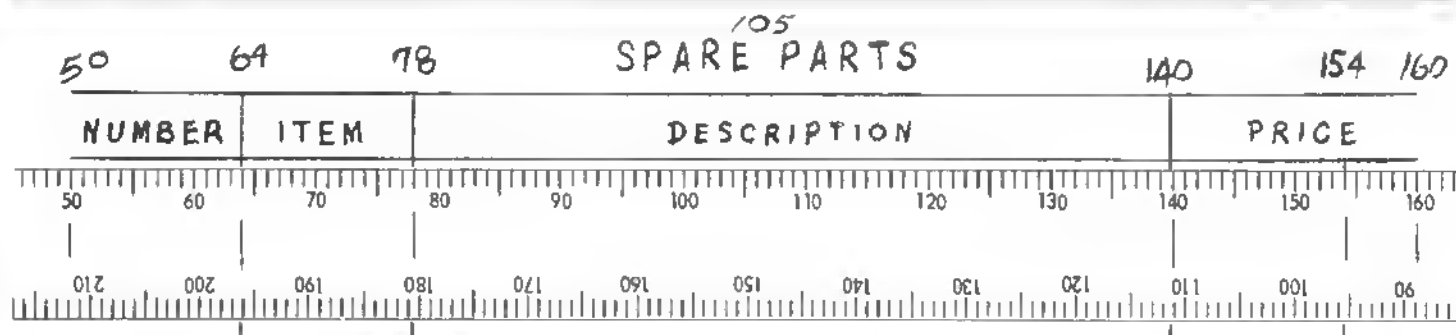


Figure 63

## MACHINE OPERATION

There are three stages in composing forms; setting the machine, horizontal composition and vertical composition.

### BASIC MACHINE SETTINGS

It is best to make as many machine settings as possible, including any "testing" that may be required, before starting to compose a job.

1. Insert a sheet of composition paper which is at least 11 inches wide.
2. Insert 670-12A type, set the impression lever for bold types, and set horizontal lever to "C" spacing.
3. Slide transparent centering scale (36) over plotting scale, matching their "C" scales.
4. Replace plotting scale in machine so its left end is even with the edge of the hanger.
5. Lift gunsight (35) against plotting scale. Its vertical hairline aligns with graduations of both scales to aid in translating the "plot" to the composition paper.

### Locating Position for Cut-Off Stop for Rules

6. Place left margin stop on "0" of margin scale and press automatic carriage return key.
7. Find 160 on plotting scale and note which calibration on the paper table scale (37) is even with it.
8. Locate this same calibration on margin scale (27) below. Note that scales are identical.

### Pre-Setting Cut-Off Stop for Horizontal Rules

9. Place a cut-off stop on the margin scale as shown in Figure 64, at position located in Step 8 (it will not be the same position as shown in the picture).

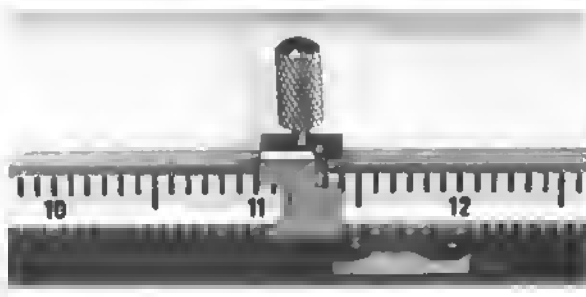


Figure 64

10. Move carriage so gunsight is near 150 mark.
11. Push non-print lever (16) to "NP" position to prevent machine from imaging paper.
12. Completely depress forms key (9) until "cut-off stop" stops carriage motion.

### Aligning Plotting Scale with Rule Cut-Off Point

13. Slide plotting scale and align its 160 mark with gunsight and tighten thumbscrew on left paper table hanger.
14. To check accuracy of setting:
  - a. Pull carriage so gunsight is to left of 150.
  - b. Press increment space key to align the gunsight with 150.
  - c. Completely depress forms key until carriage motion stops – the gunsight should be aligned with 160 on the scale. If they are not aligned reset plotting scale.

**NOTE:** Once the gunsight and plotting scale are aligned, do not alter their settings until the job is completed. All alignment of the gunsight with graduations or marks on the scales will be done by using the increment space key.

### CONSTRUCTING RULES AND LEADER LINES

The forms key (9) is used to construct rules or leaders when type fonts that contain ruling segments are used.

1. Completely depress for continuous strokes.
2. Partially depress for individual strokes.

The carriage moves 3 increments (1 unit of plotting scale) for each ruling stroke. To have rules stop at exactly the same place (on a plotting unit) gunsight must *always* be aligned with a plotting unit when starting the rule.

Cut-off stops will stop carriage *only* when completely depressing key for continuous ruling. A rule may be extended beyond a cut-off point by partially depressing key 3 times then completely depressing key for continuous ruling.

To position a cut-off stop to align with a unit on the plotting scale, when the scale and gunsight are already aligned, use the following steps:

1. Find graduation on paper table scale which aligns with plotting unit where rules stop.
2. Place cut-off stop on margin scale at same position as noted on paper table scale.
3. Align gunsight with a plotting unit 5 or 10 units to the left of stopping point for rules.
4. Completely depress forms key until carriage stops and note if the gunsight stopped to the left or right of the correct plotting unit.
5. Move cut-off stop accordingly and retest until it is properly located.

## HORIZONTAL COMPOSITION

VariTyper Machines which are equipped with a ruling device offer a decided advantage in composing forms, because copy and rules can be composed in the same operation.

### CENTERING AND COMPOSING THE TITLE

Centering titles or headings is a simple process on a DS VariTyper Machine. Centering can be done *automatically* by using the **centering scale** (36), the **gunsight** (35) and the **non-print lever** (16). The procedure is as follows:

1. Slide centering scale and align its "0" mark with 105 on plotting scale (center of form).
2. Move carriage and align gunsight with "0" of centering scale (Figure 65). Use either increment space or back space key to align.

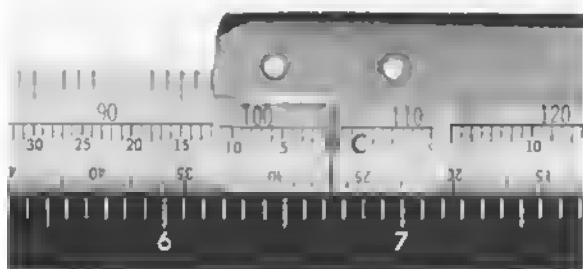


Figure 65

3. Engage non-print lever (push it to "NP"). Typing when lever is so engaged is called "*blind typing*" because machine spaces for each character but does not image paper.
4. Blind type title "SPARE PARTS" in caps, inserting 2 increments between letters, 6 increments between words. Carriage will move amount of space heading takes and its measurement will be indicated on centering scale. Gunsight stops at 15 (Figure 66).

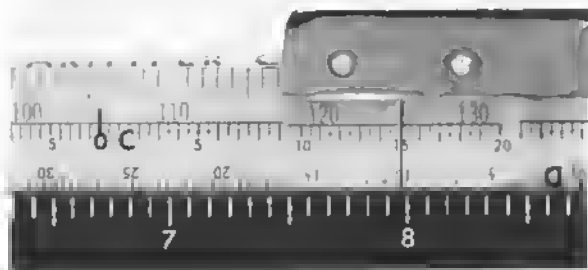


Figure 66

5. Move carriage and align gunsight with 15 to left of "0" on centering scale (Figure 67). Graduations to left of "0" are half measurements of those to right of "0". Therefore, the scale divides the space required for the copy in half so it will be centered over the "0" or center point. No mental calculations are involved, it is simply blind typing copy, reading the scale and matching numbers. It is important that the copy be blind typed exactly as it will be composed or it will not be centered correctly.

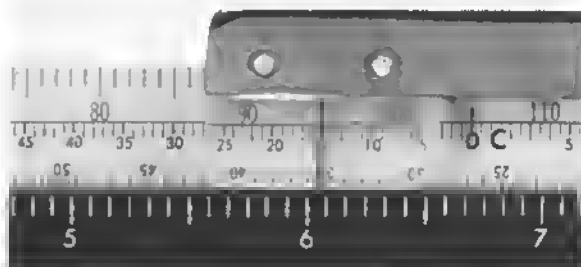


Figure 67

6. Disengage non-print lever (pull to "I" position) and type title (Figure 68). Heading is centered over "0" of centering scale which is aligned with 105 of plotting scale (the center point of the form) hence, it is centered on the form.

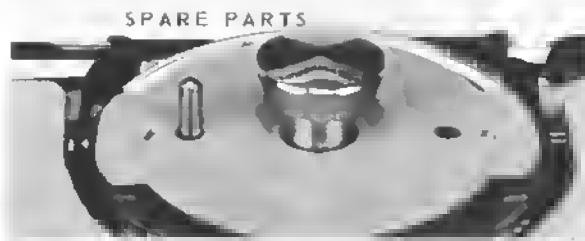
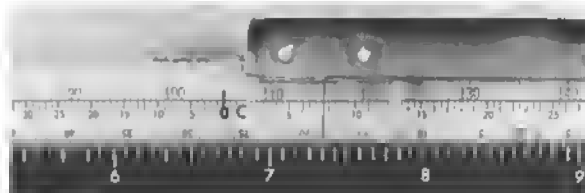


Figure 68

## BOXED HEADINGS

Vertical spacing is accomplished by using the line spacing device (23). Basic instructions for setting it were covered on Page 9.

7. Tighten left feed roll knob (24) to engage line spacing device with feed rolls.
8. Set point indicator (23b) at "12" on dial (23a) as plot calls for top rule of form to be constructed 12 points below the title.

### Top Rule

9. Move carriage and align gunsight with 50.
10. Construct medium weight rule from 50 to 160, completely depressing forms key (9) for continuous ruling. Cut-off stop will stop rule at 160. All other horizontal rules will begin and end at these points, respectively.

### Vertical Centering

Step "3, b, (1)" under Vertical Plotting (Page 40) indicates boxed headings (set in 660-8C type) will be composed 15 points below top rule.

11. Insert 660-8C type, set point indicator at 15 and feed paper.

### Horizontal Centering

Since the first two columns and the last column are narrow, it is best to use the following method for centering the headings in these columns. This method utilizes the plotting scale, gunsight and non-print lever.

12. Align gunsight with 50. Engage non-print lever and blind type word "NUMBER". Use "m's" and increment space key to fill-out space to bring gunsight to 64, position of right column rule. Space left over is 4 "m's" and 2 increments.
13. Re-align to 50, space in half of extra space (2 "m's", 1 increment), disengage non-print lever and type "NUMBER". It will be centered within the column.
14. Align gunsight at 64, engage non-print lever and blind type heading "ITEM". Fill out space to bring gunsight to 78, the next column rule. It takes 7 "m's".
15. Return carriage to 64. Move in half of space left over (3 "m's", 2 increments), disengage non-print lever and compose "ITEM".
16. Move across page to position 140 and use same procedure to center heading "PRICE" within its column.
17. The centering scale should be used to center "DESCRIPTION" since it is a short heading in relation to its column width. The column's

center is 109 ( $78 + 140 = 218$ ;  $218 \div 2 = 109$ ). Center this heading accordingly.

### Bottom Rule

Step "3, b, (2)" of Vertical Plotting (Page 40) shows that the bottom boxed heading rule will be composed 9 points below the heading.

18. Set line spacing device for 9 points and feed paper.

### Remaining Horizontal Rules

Vertical plotting calls for remaining rules to be "light weight" rules, constructed 24 points apart. Under "Selecting Ruling Segments" (Page 40) the second paragraph notes that the lower case position of Segments III, VI and VII contain light weight rules.

19. Set point indicator at 12 and feed paper twice (24 points) for each entry line.
20. Construct 10 rules from 50 to 160.

### Alternate Method for

#### Centering Headings Horizontally

The method of centering copy using the centering scale has been covered. However, this versatile scale can also be used to quickly determine the center point between column rules. For instance a column measures from 83 to 99 on the plotting scale. Its center is found as follows:

1. Slide centering scale and align its "0" with 83 of the plotting scale.
2. Locate plotting unit 99 and determine which graduation of the centering scale aligns with it. It is 12.
3. Slide centering scale right and align its 12th graduation, to the left of "0", with plotting unit 83. Its "0" will be in the center between the two points for column rules (unit 91). Try it out for several column widths.

## VERTICAL COMPOSITION

Copy or rules which extend down a page (vertically) will actually be composed horizontally on the VariTyper Machine. The following steps describe procedures for locating positions on the copy for vertical rules, aligning the form in the machine and composing the rules.

### MARKING POSITIONS FOR VERTICAL RULES

1. Remove copy and plotting scale from machine.
2. Place plotting scale on copy and match 50 with beginning point for boxed heading rules.
3. Use a blue (non-reproducing) pencil to mark a thin, short line at each of these positions: 64, 78, 140 and 154 (Figure 69, Page 44).

SPARE PARTS			
NUMBER	ITEM	DESCRIPTION	PRICE
64	78		140
154			

Figure 69

#### ALIGNING COPY IN MACHINE

- Place copy back in machine, turning one quarter turn so top of form is toward left side of carriage (Figure 70). Horizontal rules on form now become vertical rules.



Figure 70

- Close feed rolls and disengage the line spacing device to allow "free rolling" of feed rolls.
- Align point of ribbon shield with any rule (Figure 71). Roll feed rolls up and down about 4 inches, watching relationship of line to point of shield while rolling. If line moves diagonally (appears to wave) adjust paper and re-test until line follows point of shield. Use other hand to take up play in paper by winding wooden roller in opposite direction of feed rolls. This prevents creasing the paper.

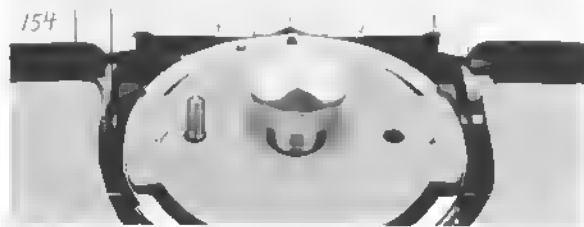


Figure 71

#### CHECKING ALIGNMENT GUIDE AND RULE

- Move carriage so shield is in margin area of paper. Press forms switch several times on right side to make a short rule.
- Move carriage so left alignment guide (38) is below this rule.
- Hold paper forward against alignment guide to determine relationship between top of alignment guide and rule (exactly on top edge of alignment guide, slightly above, or below it) (Figure 72).



Figure 72

#### ALIGNING FOR COLUMN RULES

- Free roll paper and move carriage positioning left alignment guide under blue pencil mark for rule at 154. Hold paper against guide rolling feed rolls (paper) until approximating same position as noted for test rule and lock feed rolls (Figure 73).

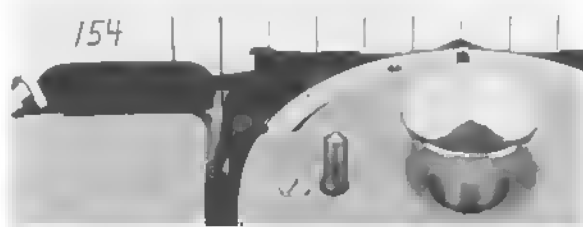


Figure 73



## BUTTING RULES

11. Move carriage and align point of shield with bottom boxed heading rule (Figure 74). If ruling switch was pressed, rules would overlap because characters on DS type fonts print approximately 2 increments to the left of the shield point. To butt horizontal rules with vertical rule, align point of shield with vertical rule, space in 2 increments and begin.

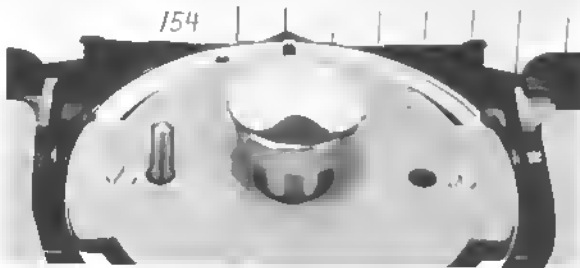


Figure 74

12. Use light weight rule (lower case position for any of three segments listed) and rule most of line, changing to single strokes of ruling switch near ending point.
13. Before final stroke check to determine if rule will butt, be short, or go over. If it will not butt exactly, use increment back space key (1 or 2 increments, whichever is necessary) to accomplish butting. Within minutes an operator can learn to butt rules perfectly.
14. Use same procedures for other rules at 140, 78 and 64. Use medium weight rules and butt them with top boxed heading rule. Since these rules all have a common starting point, this position may be marked on plotting scale or on margin dial.

## SUMMARY

This exercise has covered the fundamental steps in using various "operator aids" for plotting forms, as well as the use of those aids (parts of the machine) in composing forms. Although this exercise dealt with a very simple form, the same basic procedures can be applied to plotting and composing more complex forms.

The versatility of the DS VariTyper Machine allows its operator to plot and compose forms more quickly and easily than can be done by any other machine or method.

# CORRECTIONS — LAYOUT — PASTE-UP

## CORRECTIONS

"To err is human" applies to VariTyper operators. All copy can be corrected. The method to use is determined by the type of material being used for the job.

### COMPOSITION PAPER

Copy prepared on composition paper is normally reproduced by the photo-offset process. For best results we recommend VariTyper composition paper 202 or 111 and VariTyper forms layout paper (calibrated in picas with non-reproducing ink) 203 or 610. From this "master copy" or "mechanical" a negative is made. The negative is then used to make a metal plate for the offset duplicator.

Due to the sensitivity of the camera, erasures are not made on the master copy. The following items are recommended to aid in correcting copy and preparing mechanicals.

1. VariTyper Striped Adhesive Wax Coater 30 (Figure 75).
2. VariTyper Copy Layout Table 55 (Figure 76).
3. Straight edge and triangle.
4. X-acto knife or single edge razor blade.
5. White scotch tape and magic mending tape.
6. White water color paint.
7. Small artist brushes.
8. Light blue pencils.
9. Pica and inch rule.
10. Scissors.
11. Burnisher (VariTyper Burnishing Roller).

Corrections are made by one of two methods:

1. **Paste-over**
  - a. Correction is typed on side of copy or on another sheet of paper.
  - b. Run correction through Striped Adhesive Wax Coater (copy side up).
  - c. Trim correction to fit over error.
  - d. Place correction on top of error, align and firmly press into place (use of tissue protector over copy prevents smearing when burnishing correction).
2. **Mortise** (definition: to cut a hole; fasten securely).
  - a. Correction is typed on side of copy or on another sheet of paper.
  - b. Using the VariTyper Copy Layout Table 55, place correction over error (being sure to align accurately).
  - c. Correction and error are cut out together

(using an X-acto knife or a single edge razor blade).

- d. Discard the error and tape the correction into opening (secure from back of sheet using white scotch tape).

### DIRECT IMAGE PAPER MASTERS, VELLUM OR TRACING CLOTH

1. With Multilith eraser, use straight stroke and clean eraser often.
2. After erasing, align and type correct character, word, etc.

### STENCILS

1. Burnish error (burnisher furnished with bottle of correction fluid sold by Stencil manufacturers).
2. Align and type correction.



Figure 75

### VARITYPER STRIPED ADHESIVE WAX COATER 30

The VariTyper Striped Adhesive Wax Coater 30 (Figure 75) provides a 50% time savings over "glue-pot" and "adhesive tape" methods. This wax adheres to paper, cardboard, plastics, film and similar materials. Because of the nature of this wax and its application, all copy can be adhered and, if necessary, picked up and repositioned many times without re-waxing. This allows a "semi-layout" stage which can be changed to produce the most "eye appeal". When layout is satisfactory, mechanical can be burnished—ready for camera. Time can be saved by running all the copy through the waxer at one time. It can be positioned immediately or at a later date. This eliminates the usual time spent opening glue pots each time a paste-up is needed.



Figure 76

## VARITYPER COPY LAYOUT TABLE 55

The VariType Copy Layout Table 55 (Figure 76) is useful in every cold type department for making paste-ups and corrections, as well as for opaquing and stripping of offset negatives.

The '55' has an illuminated working area 15 $\frac{3}{4}$  inches deep and 19 $\frac{1}{4}$  inches wide. Two fifteen watt fluorescent lamps supply illumination strong enough to permit working through several layers of paper. It is compact enough to be used on any desk or table top. The top and left side rails square for accurate alignment with a T-square. Folding legs permit working with the top flat or tilted 10°.

## LAYOUT AND PASTE-UP

After correcting copy the next step is the paste-up. The copy is first coated on the back with a coat of wax or rubber cement. Then by the careful use of a paper cutter, X-acto knife, razor blade or scissors the waxed copy will be cut apart. Skill will be developed in cutting very close to the type where it is required that the copy be placed in a small space such as between rules or in small boxes.

As the copy is cut apart it should be placed in a safe location to eliminate losing small pieces.

Forget the copy for a moment and prepare layout sheet (or board). The page size, margins and copy area have been determined before the copy was composed (usually specified by the editor).

Using a light blue pencil (as the camera and film used will not reproduce blue) mark the margins, center, gutter between columns and any other points to assist in positioning copy correctly.

A layout sheet graduated in picas both horizontally and vertically (*VariType Forms Layout Sheet #203 or #610*) will aid in paste-up. However, if not available, the plain paper or board can be attached to the drawing board, straightened with the T-square or parallel rule and secured with thumb tacks.

From this point on, the important thing is to have copy in its proper location and properly aligned.

Tools for paste-up work are used to insure straight copy both horizontally and vertically.

Copy will be lifted, piece by piece, and placed in proper position on layout sheet or board. Lifting can be done by using point of X-acto knife or stylus pins. The parallel rule or T-square aid in aligning copy. Dividers can be opened to exact distance between two points and then compared to copy in other areas that must be the same. By squaring parallel rule, holding bottom rule firmly and moving top rule to different lines of copy the alignment can be checked and straightened.

Until copy has been burnished it can be moved (waxed copy can be picked up and moved even after burnishing). Burnishing is accomplished by placing tissue paper over copy and pressing copy down with a burnishing tool. The reason for the tissue is to prevent copy from smearing and also to prevent copy from moving out of position.

After copy is positioned properly any dirt or unwanted marks can be removed by using either:

1. Rubber cement pick-up (which can be purchased at art supply stores; or, can be made by allowing some rubber cement to solidify and making a ball out of it).
2. White paint and brush (cover dirt, etc.).

When layout is complete, protect with acetate cover. It is now ready for camera.

## CONSTRUCTING LEADER LINES

The purpose of leader lines is to aid the eye in traveling across the page from column to column. This creates an optical illusion of bringing copy in columns closer together.

### PARTS USED

1. Horizontal plotting scale (34)
2. Gunsight (35)
3. Forms key (9)
4. Cut-off stops (Page 41)
5. Increment space key (4)
6. Increment back space key (14)

### PROCEDURE WITH RULING DEVICE

Choose "segment" for desired leader line effect (Segments, Page 37) according to designer's specifications. Plotting has been completed.

1. After typing text copy of each line note position of gunsight on plotting scale. If it is not exactly aligned with a graduation press increment key to align with nearest plotting unit. Leader lines *must always* begin on a graduation of the plotting scale to end at an exact point.
2. To construct short leaders for narrow column widths partially depress forms key for single strokes.
3. To construct long leaders for wide columns completely depress forms key for continuous action until nearing ending point. Then use single strokes to complete—OR—use a "cut-off stop" (described on Page 41) to stop leaders automatically at desired position. Cut-off stops will stop carriage *only* when forms key is completely depressed. When it is necessary to extend a leader beyond the cut-off stop, partially depress forms key (3 or 4 strokes) to by-pass it and continue with automatic leaders, if desired.

### EXAMPLE — Manuscript

CONTENTS	PAGE
Oklahoma Labor Market	
at a Glance.....	1
Recent Developments.....	4
Current Developments in Major Areas	
Oklahoma City Area.....	8
Tulsa Area.....	9
Ardmore Area.....	10
Current Developments.....	16

Figure 77

### FINISHED COPY — Using ruling mechanism

CONTENTS	PAGE
Oklahoma Labor Market	
at a Glance.....	1
Recent Developments.....	4
Current Developments in Major Areas	
Oklahoma City Area.....	8
Tulsa Area.....	9
Ardmore Area.....	10
Current Developments.....	16

Figure 78

### PROCEDURE WITHOUT RULING DEVICE

As stated previously, the ruling mechanism is optional.

To obtain leaders on a DS VariType Machine which is not equipped with ruling mechanism:

1. Before typing leader line move Diff-Std-Out lever to "Std" position (in this position all characters receive 3 increments each). To insure correct increment spacing return Diff-Std-Out lever to "Diff" position before typing words.
2. Before typing leader, glance at position of gunsight on horizontal plotting scale. If gunsight is not exactly on a graduation of the scale, press increment space key until it does line up with graduation. Leader line *must always* start on a graduation of the plotting scale to insure leaders ending exactly at the same position each time.
3. Press period key if a dot leader is desired. Press hyphen key if a dash leader is desired.

### FINISHED COPY — Using same manuscript as used for ruling mechanism

CONTENTS	PAGE
Oklahoma Labor Market	
at a Glance.....	1
Recent Developments.....	4
OR —	
Tulsa Area.....	9
Ardmore Area.....	10
Current Developments.....	16

Figure 79

### ASSIGNMENT

Compose at least one part of Exercise 8, located in back of manual.

# PLOTTING AND COMPOSING TABULAR COPY

Tabular copy is any copy that consists of columns of names and/or figures. It may also contain rules and leader lines. Price lists, time schedules, catalog pages, rate sheets and financial statements are some examples of tabular copy.

A table is set up on the DS VariTyper Machine in much the same manner as on a typewriter. Adequate space must be allowed for each column and for space between columns. However, instead of being limited to one spacing, as on a typewriter, the VariTyper Machine provides a choice of spacings that can be adapted to the table. In this way, a table can be condensed to fit on a smaller page, making it easier to handle and file, without sacrificing any degree of clarity. The use of contrasting types and white space, too, creates a table that is easier to read even when smaller types are employed.

## PARTS AND OPERATOR AIDS USED

1. Horizontal plotting scale (34)
2. Centering scale (36)
3. Gunsight (35)
4. Paper table scale (37)
5. Margin scale (27)
6. Tabulation scale (Page 15)
7. Split space bar (11 & 11a)
8. Forms key (9)
9. Non-print lever (16)
10. Differential—Standard—Out lever (12)
11. Horizontal Copyfitting Calculator (Page 52) or Horizontal Copyfitting Chart (Page 53)
12. Ruling cut-off stops (Page 41)

## HORIZONTAL PLOTTING

The format for tabular copy will most likely have been established, therefore, the VariTyper operator's task begins with horizontal plotting of the copy. The copy and the area must be measured in increments to determine the correct horizontal spacing and type size. Since the basic operator aid for plotting is the **horizontal plotting scale (34)**, both the copy and over-all column width should be translated into "plotting units" which correspond to the graduations of the plotting scale.

As each plotting unit equals 3 increments, the number of increments divided by 3 equals the number of plotting units rounded off. For example: If copy in a column was 31 increments,  $31 \div 3 = 10$  plotting units, plus 1 increment, or "rounded off" 10 plotting units. If copy measured 32 increments,  $32 \div 3 = 10$  plotting units, plus 2 increments; or "rounded off" 11 plotting units.

## GENERAL PLOTTING PROCEDURE

### Measuring the Copy

1. Count number of increments in longest entry of each column, taking both headings and listing into consideration (see Increment Chart, Page 25, Figure 46).
2. Convert increment count of each column head or listing to nearest plotting unit.
3. Add totals of columns together to determine space needed (in plotting units) for copy.

### Measuring the Horizontal Copy Area

1. Determine number of increments in allocated copy area for the four horizontal spacings (use Horizontal Copyfitting Calculator or Chart, Page 52 or 53).
2. Convert increment count for total width (for each horizontal spacing) into plotting units, plus extra increment(s) if exact width is required.

### Determining the Correct Horizontal Spacing and Positioning of Copy

1. Subtract plotting units needed for copy from plotting units in total width to find white space left over.
2. Divide difference by the number of gutters (space between columns) for each horizontal spacing—to find the number of plotting units for each gutter.
3. Whenever there is sufficient space 6 plotting units (or more) should be allowed for gutters. This facilitates use of the tabulation scale and speeds up production.

**NOTE:** When space is limited gutters can be narrower. Preferably a minimum of 2 plotting units should be allowed. When less than 6 plotting units are between the last character typed and beginning of next column, tab stops *cannot* be utilized.

4. Make notes on rough draft or mark plotting scale according to calculations.

### Formula—Horizontal Plotting of Tabular Copy

1. Total number plotting units in allocated width  
MINUS
2. Number plotting units needed for actual copy  
EQUALS
3. White space (in plotting units) to be distributed among column gutters.
4. Number of plotting units for white space  
DIVIDED BY
5. Number of gutters (gutters will always be 1 less than number of columns)  
EQUALS
6. Number of plotting units between columns.

### Setting the Tabulation Scale

To facilitate use of the tabulation scale (Page 15, Figure 24) starting positions should be located on *even* numbered calibrations on the horizontal plotting scale. When examining and comparing the tabulation scale and the horizontal plotting scale, it is apparent that the tab scale is calibrated in 6 increment units, while the horizontal plotting scale is calibrated in 3 increment units (each tab scale unit is equivalent to 2 horizontal plotting scale units).

The tabulation scale can be removed from the machine to set tab stops properly. Remove the scale by slightly lifting right hand side of scale and slide away from operator, then remove by pulling to the right to disengage the left holder. Reverse the procedure for reinstalling the tab scale, making certain that it snaps into position. The **tabulation scale adjustment knob** (Figure 80) is located on the right hand tab scale bracket. This knob must be "seated" in 1 of the 2 detent positions.



Figure 80

### COMPOSING TABULAR COPY AT UNIT SPACING

Some operators prefer to compose the numerical portion of tabular copy using the DS VariTyper Machine at "unit spacing".

At unit spacing, all characters receive 3 increments. Each plotting unit on the horizontal plotting scale is equivalent to 3 increments. Thus, calculations can be determined in characters rather than in increments.

This spacing also improves legibility for numbers because the period and comma receive an extra increment of white space, creating a definite separation between tenths, hundredths, thousandths, etc.

### EXAMPLE

**Problem:** Fit typewritten table (Figure 81) into a 3 inch width. For this example plan sufficient space for gutters to facilitate use of the tabulation scale (each gutter must have 6 or more plotting units).

#### STATIONERY PRICE LIST

No.	PER 500	PER 1,000	PER 3,000	PER 5,000
1-150	9.60	12.75	10.65	9.65
2-150	10.30	13.75	11.10	11.00
3-150	10.60	14.15	11.95	11.25
1-160	8.35	11.10	9.25	8.40
2-160	8.95	11.95	9.65	9.55
3-160	9.20	12.30	10.40	9.80
1-170	9.60	14.50	12.00	11.10
2-170	8.40	10.45	8.50	7.60
3-170	11.55	14.25	12.10	10.80

Figure 81

#### Applying the Formula —

1. Use Horizontal Copyfitting Calculator or Chart (Page 52 or 53) to determine number of increments in 3 inches (18 picas).
  - a. A — 117 increments (39 plotting units)
  - B — 128 increments (42 plotting units, plus 2 additional increments) call it 43
  - C — 141 increments (47 plotting units)
  - D — 158 increments (52 plotting units, plus 2 additional increments) call it 53
2. Numerals of example will be composed with DS machine set for unit spacing (Diff-Std-Out lever on "Std"). Count number of characters in longest entry of each column.
  - a. All columns contain 5 characters each. Total of all 5 columns equals 25 characters (equivalent to 25 plotting units).
  - b. Check step 1. a.

**NOTE:** "A" spacing leaves 14 plotting units to be divided among 4 gutters — *not enough space to clear tab stops.*

"B" spacing leaves 18 plotting units to be divided among 4 gutters — *not sufficient.*

"C" spacing leaves 22 plotting units to be divided among 4 gutters — *could be used; but, it will be necessary to back space (use 3-inc. back key) for the difference between the actual number of plotting units in the gutters and 6 (the*

minimum) to insure positive engagement of the tabulation mechanism. In this instance the gutters have 5 plotting units and 1 back space would be sufficient.

"D" spacing leaves 28 plotting units to be divided among 4 gutters.

- c. Using above calculations at "D" spacing, "D" horizontal plotting scale and "D" tabulation scale copy begins at:

100	112	124	136	148
1.150	00.00	00.00	00.00	00.00
GUTTER — 7 PLOTING UNITS	GUTTER — 7 PLOTING UNITS	GUTTER — 7 PLOTING UNITS	GUTTER — 7 PLOTING UNITS	

NOTE: The starting point of "100" was selected at random. Starting at "0" would be entirely too close to the left margin of the paper.

#### Setting the Machine —

The detailed steps for setting the machine are listed below. Learn to follow these steps in the proper order.

1. Remove tabulation scale and set tab stops at positions designated on the "plot" (use "D" scale).
2. Re-install tabulation scale and —
  - a. Tab to first tab stop (100) and, at this point "100", align horizontal plotting scale with the gunsight.
  - b. Tab to each of the remaining tab settings and observe the gunsight position on the horizontal plotting scale. It should read the same as the tab settings. Repeat this "check" and if discrepancies occur they can be corrected by —
    - (1) Slightly moving individual tab stops; or,
    - (2) Turning the tab scale adjustment knob (Figure 80) until it snaps into the other detent position. This adjusts all tab stops simultaneously.
3. Tab to first tab stop "100" and observe the gunsight position on the paper table scale (calibrated in inches).
4. From this point set the left marginal stop approximately an inch to the left. (This stops the carriage when using the automatic carriage return and paper feed key.)

NOTE: The left marginal stop can be used for the starting position of the first column with

tab stops set for the remaining columns. This would be especially desirous when the first column is descriptions or itemized copy. Even when utilizing the marginal stop as a starting point the tabulation scale stops are always set *first*. Tab to position of first tab stop and observe the gunsight position on the paper table scale (calibrated in inches). From this point set the left marginal stop the desired number of inches to the left of this reading.

5. Insert writing material.
6. Set and engage the line spacing device (23) for the desired paper feed and type heading, sub-headings and construct rule.
7. Press automatic carriage return and paper feed key. This returns carriage and feeds paper — ready for next line.
8. Tab to 1st tab stop "100" and type entry.
9. Tab to 2nd tab stop "112" and type entry.
10. Tab to 3rd tab stop "124" and type entry.
11. Tab to 4th tab stop "136" and type entry.
12. Tab to 5th tab stop "148" and type entry.
13. Press automatic carriage return and paper feed key.
14. Repeat procedure for each line.

#### Completed VariType Copy —

The plot specified a "D" spacing type font. There is no limitation on the depth of this table, so a "10" point condensed type (690-10D) was chosen for the body of the table. The main heading is composed with 970-10B at D spacing, letter-spaced. Sub-heads composed with 2000-4D, small caps. Headings and sub-headings were composed with Diff-Std-Out lever (12) at "Diff" and the body was composed with this lever at "Std".

#### STATIONERY PRICE LIST

NO.	PER 500	PER 1,000	PER 3,000	PER 5,000
1-150	9.60	12.75	10.65	9.65
2-150	10.30	13.75	11.10	11.00
3-150	10.60	14.15	11.95	11.25
1-160	8.35	11.10	9.25	8.40
2-160	8.95	11.95	9.65	9.55
3-160	9.20	12.30	10.40	9.80
1-170	9.60	14.50	12.00	11.10
2-170	8.40	10.45	8.50	7.60
3-170	11.55	14.25	12.10	10.80

Figure 82

#### ASSIGNMENT

Plot and compose at least part of Exercise 9 in back of manual.

# HORIZONTAL COPYFITTING CALCULATOR



Figure 83

The *Horizontal Copyfitting Calculator* (Figure 83) is an excellent operator aid for copyfitting and setting the DS VariType Machine for an exact column width. It enables the operator to quickly determine the average number of characters for each horizontal spacing that can be composed in a specified column width. It also indicates the exact number of increments for each horizontal spacing in a specified line length.

The Calculator consists of two parts:

1. The stationary part is a rectangular plastic scale which has been imprinted with a pica rule along its top edge and pairs of numbers in four rows—each corresponding to one of the four horizontal spacings on the machine.

a. The pairs of numbers are printed alternately in black and in red (red numbers appear to be grey in the illustration, Figure 83).

(1) Black numbers (composed in the usual horizontal position) align with pica graduations of the pica scale above.

(2) Red numbers (composed vertically) align with half pica graduations of the pica scale.

h. The pairs of numbers are set in large and small figures.

(1) The larger figure is for copyfitting calculations. It indicates the average number of VariType characters that can be composed in the selected line length or column width.

(2) The smaller figure is for setting the machine. It represents the exact number of increments of space in the selected line length. Operators should always set the machine to correspond to the increments listed on the calculator.

This eliminates testing and measuring to match line lengths when making corrections and additions to copy.

2. The movable part is a plastic sleeve called a *cursor*.

a. Its pointer is set to align with graduations on the pica scale.

b. Its four transparent windows frame the figures in each row which correspond to the pointer setting.

(1) The letters (A, B, C and D) to the left of the windows identify the rows and indicate their relationship to the horizontal spacings on the machine.

(2) The words "characters" and "increments" to the right of windows identify the numbers framed.

## EXAMPLE — READING THE CALCULATOR (Figure 83)

1. Pointer of cursor is on 18 pica mark (indicates line length).
2. Windows show "character—increment" calculations for each horizontal spacing: A 43—117; B 47—128; C 52—141; D 58—158.

**NOTE:** The *Horizontal Copyfitting Calculator*, Cat. No. 1150 and its companion scale, the *Line Spacing Scale*, Cat. No. 1155 (Page 22) are available. Order them through the local VariType Branch Sales Office.



# HORIZONTAL COPYFITTING CHART

Character Count and Increments for Specified Column Widths



Figure 84

The scale portion of the Horizontal Copyfitting Calculator (illustrated in Figure 83, Page 52) has been enlarged to produce a Copyfitting Chart to accommodate operators who have not yet acquired the calculator. The chart is used both for copyfitting and setting the DS VariTyper Machine to an exact column width.

## DESCRIPTION OF THE CHART

- Top of chart represents a pica scale, graduated in half picas.
- Below the pica scale are four rows of figures. Each row contains calculations pertaining to a horizontal spacing on the DS machine and is identified by the same letter (A, B, C or D).
  - The pairs of numbers are printed, alternately, in black and grey.
    - Black numbers, *positioned horizontally*, ("10", the first pair of numbers in Row A, align with the "5" pica mark) are for column widths ending on pica marks; 5, 6, 7, etc.
    - Grey numbers, *positioned vertically*, ("10", the second pair of numbers in Row A, align with the 5½ pica mark) are for column widths ending on half pica marks; 5½, 6½, 7½, etc.

- The pairs of numbers are set in different size types: large figures over small figures ( $A_{10} B_{10} C_{10} D_{10}$ ).
  - The large figures are for copyfitting calculations. They indicate the average number of VariTyper characters that can be composed in a line of a selected column width.
  - The small figures are for setting the machine. They represent the exact number of *increments* of space in a selected column width. Operators should always set the machine so column widths correspond to the increments listed on the chart. This eliminates testing and measuring to match line lengths when making corrections and additions to copy.

# AUTOMATIC JUSTIFICATION

As mentioned, the process of composing copy with an even right hand margin is called justification. A DS VariTyper Machine that has a "justifier mechanism" can be used to produce justified copy automatically.

The process is very simple and is accomplished by typing the rough and finished copy, line-for-line. As a line is typed on the rough side (left side of the paper) the machine automatically registers its shortage. The tabulator key is then used to move the carriage a few spaces across the page to the starting point for the finished copy. As the finished line is typed, the machine automatically inserts the correct amount of space between words to lengthen the line to the predetermined column width. The finished copy will have the desired right hand margin. It is then separated from the rough copy and pasted-up for reproduction.

## PARTS USED IN JUSTIFICATION

### ACTUATING BAR LOCK

The actuating bar lock (29) located at the right end of the carriage is a "slide lock" that pulls to the right to release the actuating bar when justifying automatically (Figure 85). To lock the actuating bar, bank the carriage, space in a few increments and push the lock to the left.



Figure 85

### TABULATOR STOPS

Tabulator stops (Figure 86) are placed on the tabulation scale, which is located at the rear of the carriage. A tabulator stop determines the starting position of justified copy. It should be placed (on the tabulation scale) approximately 6 plotting units beyond the ending position (on the horizontal plotting scale) of the "rough" copy. This positioning will allow a minimum amount of

carriage movement between the rough and justified copy.



Figure 86

To remove a tabulator stop the tabulation scale must be removed from the machine (see Page 15). Loosen thumb screw and slide stop off scale. It is not necessary to remove the tabulation scale when moving a tabulator stop that is already on the scale. Loosen thumb screw holding tab stop in position and slide tab stop to desired position and tighten thumb screw.

### MARGIN STOPS

When automatically justifying copy the left and right margin stops (Figure 87), respectively, determine the beginning and end positions of the "rough copy", hence, the width of the column to be justified. The right margin stop is removable and is usually placed at "7, plus 2 extra teeth" on the margin scale. To set right margin stop:

1. Squeeze top prongs together, hook lower end under margin scale and then hook top end over margin scale.
2. Press top prongs together and slide along margin scale aligning its pointer with "7, plus extra teeth" on the scale.

The left margin stop is then set for the desired column width. Subtract the width of the column from "7" and position left margin stop at this point. For instance, the left stop is set at "4" for a 3 inch column ( $7 - 3 = 4$ ).

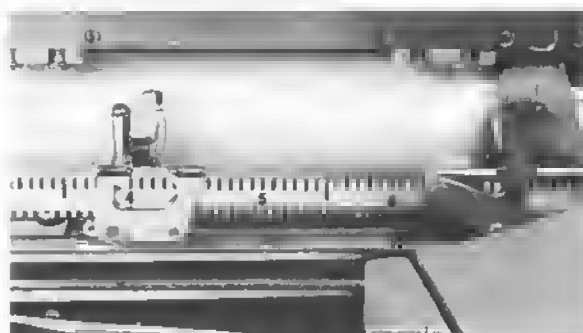


Figure 87

## MARGIN DIAL

The main functions of the margin dial (20) are (1) to act as a double check for starting points and (2) to aid in testing for alignment of left margin when automatically justifying copy.

The starting point of the rough copy is established as for any copy by manually setting the left margin stop (Figure 87) and aligning the pointer (20c) even with the vertical line (20a) of the dial (Figure 88).

## MARGIN STOP ADJUSTER KNOB

Located at the right end of the margin scale is the margin stop adjuster knob (27b). Detailed instructions for its use are on Page 15.

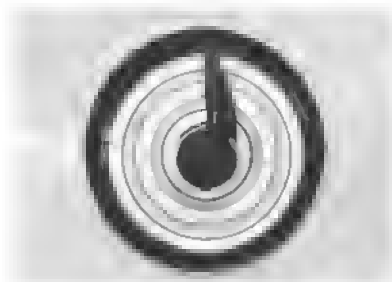


Figure 88

After the starting point for justified (finished) copy has been determined (by pressing the tabulator key) this position is marked by moving the outer rim (20d) of the dial until its notch ("v" groove in the edge of rim) is even with the edge of the pointer (Figure 89).

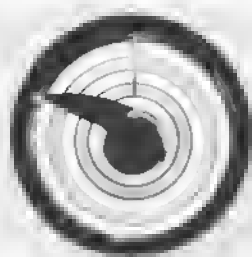


Figure 89

## JUSTIFIER DIAL

The justifier dial (21) serves two purposes; it shows when the machine has reached the *justifying range*, and indicates how much typing space is left. Its face (21a) has four scales (A, B, C and D) which correspond with the horizontal spacings on the machine.

When typing the rough copy a bell rings as the carriage nears the end of the line. As typing

continues the justifier dial pointer (21b) moves up on the dial (Figure 90). The rough copy line must end with the pointer in the justifying range (not beyond "0" of dial) for the line to justify when it is repeated on the right side of paper.

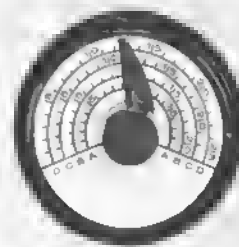


Figure 90

## JUSTIFIER DIAL ADJUSTER KNOB

Located at the left end of the margin scale is the justifier dial adjuster knob (27a) (Figure 91a). It is used to:

1. Adjust the justifier dial pointer for exact column widths when exactness within fractions of an increment is required.
2. Adjust the justifier dial pointer so that it aligns exactly on "0" of the scale (Figure 91).

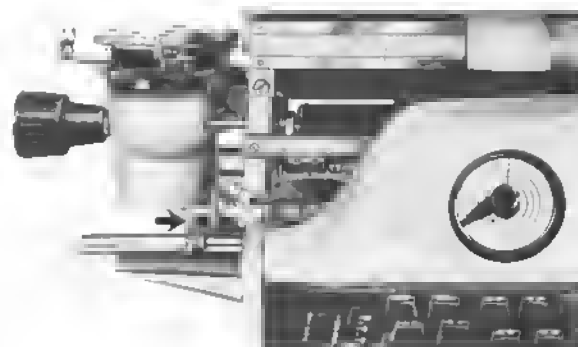


Figure 91a

The adjustments are made prior to typing the first rough copy line. If the pointer does not stop exactly on the "0" (last mark on justifier dial) move adjuster knob slightly until pointer aligns with this mark. Always check this adjustment when changing from one horizontal spacing to another.

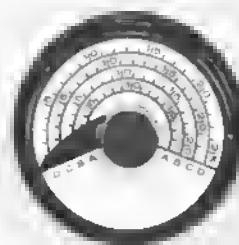


Figure 91

## SPACE BAR

The space bar (11 & 11a) controls justification because the necessary "spread" for justification takes place between words. It is recommended that the right portion of the space bar (2 increment space) be used for justified copy. The following procedures must be observed:

1. Always bottom the space bar the same as a key of the keyboard.
2. Do not use space bar to indent paragraphs when justifying automatically.
3. Do not space after the last word typed on the rough copy line.

## SETTING THE JUSTIFIER

The detailed steps for setting the justifier are listed below. Learn to follow these steps in the proper order. They soon will become automatic.

1. Pull actuating bar lock to the right.
2. Insert type and set proper horizontal spacing, vertical spacing, and impression.
3. Place margin stops the desired width apart, the right hand (removable) stop at 7, plus two additional teeth (see "margin stops", Page 55) and the left hand stop as many inches to the left of 7 as needed for the desired column width.
4. Press automatic carriage return and paper feed key. This will bank the carriage against the left margin stop.
5. Move margin pointer in clockwise direction until pointer lines up with mark at top of dial.
6. Test for accuracy of alignment by pressing automatic carriage return and paper feed key 3 or 4 times. If pointer does not align perfectly with vertical line adjust by:
  - a. If pointer is off to the left of vertical line turn margin stop adjuster knob (27b) (see Page 15) 1/2 turn toward operator.
  - b. If pointer is off to the right of vertical line turn margin stop adjuster knob (27b) (see Page 15) 1/2 turn away from operator.

NOTE: In either case re-test several times before starting composition.

7. Regardless of the horizontal spacing being used, position a tabulator stop on the tabulator scale at "100" on the "A" scale. The position of this determines the left hand margin of the justified copy.
8. Insert paper; be sure that all copy will fall on paper. (Copy need not be centered as rough copy will be cut off and discarded.)
9. Set and engage the line spacing device.
10. Type a line of copy until justifier pointer moves up on justifier dial. Just before it begins to move a bell will ring.
11. DO NOT SPACE AFTER LAST WORD TYPED or extend any lines beyond zero

(last mark) on justifier dial.

12. Press tabulator key.
13. Move outer rim of margin dial until its notched "v" marker aligns with margin pointer.
14. Retype same line of copy just completed.

The justifier is now set. Press carriage return and paper feed key to bank carriage and feed paper for each succeeding line.

## PARAGRAPH INDENTIONS

Paragraph indentions are figured from the left margin starting points of both the rough and justified copy. There are two ways to indent for paragraphs:

1. On rough side type "m's" for space desired for indention. On finished (justified) side engage non-print lever and "blind type" the same number of "m's".
2. Space out number of increments to be indented using increment space key for both sides of the copy.

## PARAGRAPH ENDINGS

To prevent the machine from inserting extra space between words of short lines which do not extend into the justifying area (such as paragraph endings) the operator will do the following:

1. Use right index finger to move pointer of justifier dial to "0" position on its scale (not beyond) and hold it there.
2. Use right thumb to press tabulator key to move carriage to finished copy side of paper.

## ASSIGNMENT

Set automatic justifying mechanism and compose Exercise 10 in back of manual.

## EXACT COLUMN WIDTHS

The DS Scale (Pages 25 thru 27), the Horizontal Copyfitting Calculator (Page 52) or the Horizontal Copyfitting Chart (Page 53) may be used to determine the exact number of increments in a column width.

This count is important for making corrections when several persons are working on the same job, and when space allowed for copy is limited. Merely setting the stops at the same position and resetting a machine will not necessarily produce the same column width. A simple procedure can be used to set the machine for a precise column width.

### Justifier Steps for Exact Column Width

1. Set margin stops for the width desired (for detailed instructions see column one).
2. Type a line of "m's" to get an exact count of

the increments in the column width (justifier dial to zero).

3. Compare "test line" with correct number of increments (previously determined). Test line may be:

- a. Exactly right—proceed with the job.
- b. Too long—

- (1) Return to starting point.

- (2) Turn the **margin stop adjuster knob** (located on the right end of the margin scale) *toward* you. This decreases *even increments only*; OR, blind type the desired number of increments and turn the **justifier dial adjuster knob** (located on the left end of the margin scale) *away* from you until the dial pointer is aligned with "0" on the dial. This adjuster knob decreases both full and fractions of an increment.

**NOTE:** If the number of increments to be eliminated from the line is more than the knobs will adjust for, move the *left* margin stop one tooth to the right. Return the carriage and set the dial pointer to align with the new starting point. After moving the margin stop, it is necessary to re-test and make adjustments with the adjuster knobs the same as above.

- c. Too short—

- (1) Return to starting point.

- (2) Turn the **margin stop adjuster knob** *away* from you to increase the number of increments in the line; OR, blind type to the desired number of increments and turn the **justifier dial adjuster knob** *toward* you until the dial pointer goes back to "0" on the dial. (Remember, this adjuster knob will give exactness of fractions of an increment.)

While this operation is described in detail, it is quite simple and should take less than two minutes to complete.

## TYPOGRAPHICAL ERRORS

Strive to type accurate, as well as correct justified copy. Cultivate the habit of checking rough copy lines before tabbing. If errors do occur in rough or finished copy, correct them as follows:

1. Transposed letters can be corrected on finished (justified) side without retyping rough copy line.
2. If incorrect letter has been typed, compare its increment value with that of correct letter. If they are the same, simply correct copy on justified side. If *correct* letter has a *higher* increment value, add the additional increments with increment space key before tabbing. If *correct* letter has a *lower* increment value, subtract the necessary number of increments with increment back space key before tabbing.
3. If error is not noticed until after tabbing, copy can be corrected by adding or subtracting increments between words, or carriage can

be banked and rough copy retyped.

4. If space bar is pressed twice near beginning of rough copy, simply eliminate space stroke between next two words.
5. If space bar is pressed after last word on rough copy line, bank carriage and retype rough copy line. Do not move paper up in machine. Type over previously typed copy.
6. If space bar is pressed twice between words on justified copy—rebank carriage, retype rough line, engage non-print key and blind type copy until correct position on justified copy is reached and compose remainder of line.

## SQUEEZING EXTRA CHARACTERS WITHIN A GIVEN LINE LENGTH

Occasionally it is necessary to "squeeze in" a line of copy so that it will accommodate more characters (increments) than the increment count for the column width.

This may be due to several reasons. The last word of the line may be one that cannot be hyphenated; or, hyphenating the word would violate standard practices of good typography. (Avoid whenever possible ending successive lines with periods, commas, hyphens, etc.). It may also be impractical to move the last word to the next line because the sentence would fall short of the justifying range. Although letterspacing a word within the sentence would bring it within the justifying range, it is not desirable to letterspace. Under these circumstances, it may be possible to get more increments on a line.

While composing the line in question, type only those characters of the last word that *will not* move the justifier pointer beyond the "zero" mark.

Next make these calculations; (1) count the number of increments in the remaining character(s) of the word, and (2) count the number of spaces between words in the line. Then determine the following:

1. If the total number of increments remaining exceeds the number of spaces in the line the word *cannot* be squeezed in. In this case it may be necessary to hyphenate the word, use letterspacing within the sentence, or have the editor change the wording.
2. If the total number of increments remaining *does not* exceed the number of spaces within the line:
  - a. Subtract increments of character(s) not typed from number of spaces in sentence.
  - b. Space back the difference, using increment back space key.
  - c. Tab to finished copy starting point.
  - d. Use space bar to space after each word and then the increment back space key to go back one increment each time before typing the next word.

## COMPOSING COPY FLUSH LEFT-CENTERED-FLUSH RIGHT

### HEADINGS-SUBHEADINGS

1. Beginning at left margin of rough copy, type heading.
2. Count number of "m's" (plus an "n" or an "i" if necessary) to bring justifier pointer to "0" on dial. This step is used to obtain a numerical value of space left over.
3. Tab and align to justifying starting point.
  - a. If heading is to be *flush left* in column, compose at this point.
  - b. If heading is to be *centered* in column, engage non-print lever and type half the number of "m's", etc., for space left over.
  - c. If heading is to be located *flush right* in column, engage non-print lever and type same number of "m's", etc., as on rough copy side.
  - d. Compose heading.

### RUN-AROUNDS-IN TEXT COPY

It is frequently necessary to change from a wider to a narrower column width to fit copy around a picture or illustration, to compose in outline form for a step-by-step procedure, or just to change the appearance of copy. These are commonly called "run-arounds".

To accomplish this:

1. Determine the total indention desired in terms of "m's".
2. From beginning of *rough copy*, type number of "m's" to be indented (mark this position on margin dial). From this point, type line of copy.

**NOTE:** It is not necessary to type "m's" after the first line, as the position is marked on dial—merely bank carriage, move carriage (using carriage release lever) to "mark" and type rough copy line.

3. Tab and align at *finished copy* starting point.
  - a. If "white space" is to be located to right of column—type at this point.
  - b. If "white space" is to be evenly divided on both sides of copy; engage non-print lever and indent one-half of "m's" (mark this position on margin dial\*)—type finished copy at this point.
  - c. If "white space" is to be located to left of column, engage non-print lever and indent ALL of "m's" (mark this position on margin dial\*)—type copy at this point.

\* It is not necessary to count the "m's" after the first line of finished copy, as the position is marked on the dial. After lugging, move carriage using either carriage release lever or increment space key to align pointer with mark on dial for indention.

## ROUGH AND FINISHED EXAMPLES OF HEADINGS AND RUN-AROUNDS

### POSSIBILITIES UNLIMITED

by VariTyper Corporation

Nothing on a printed page can stir the imagination or prove a point as quickly, as easily or more convincingly than a good photograph. If you need donations for a new wing on the church—take a picture of the architect's drawing—reproduce it—show the people what you are trying to accomplish. Here is what the garden looked like before we landscaped it, here's what it looks like today...two photos tell the tale. This... (photograph)... is the kind of inventory that we maintain to give you better service. So your product is compact, easy to operate and especially treated to prevent rust.

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## JUSTIFYING VARIATIONS AND SUGGESTIONS

After the justifier is set and the rough copy line has been typed, a justified line can start at any position to the right of the rough copy. Justified copy can even be placed on a separate sheet of

paper, a direct image master, a stencil or other type of master. Because of the flexibility of the justifier, copy with a variety of shapes can be easily produced. Some are shown below.

### JUSTIFYING SLANTING MARGINS LEFT AND RIGHT SLANTS

1. Set justifier.
2. Type rough copy line.
3. Tab to start of finished copy, type first line

at this point: but, on succeeding lines of finished copy indent a pre-determined number of increments before typing (Figure 93).

This is a sample of copy slanting on both the left and right hand side of the column. The rough copy is typed in the usual manner, but each justified line is indented a pre-determined number of increments. This produces an unusual

This is a sample of copy slanting on both the left and right hand side of the column. The rough copy is typed in the usual manner, but each justified line is indented a pre-determined number of increments. This produces an unusual

Figure 93

### SLANTS OF EITHER LEFT OR RIGHT MARGINS

1. Set justifier.
  2. Type rough copy line, decreasing pre-determined number of increments at start of each succeeding line (using "m's" or other letters).
- NOTE: In this type of "slant" the column width is actually decreasing with each line; and these pre-determined increments must be eliminated in the rough copy (same principle as for run-arounds and indentions).

3. Tab to start of finished copy, type first line and on all succeeding lines:
  - a. If slant is to be at *left margin*, using non-print lever, indent same number of increments on both rough and finished copy (Figure 94).
  - b. If slant is to be at *right margin* of column type all lines at start of finished copy (Figure 95).

This is a sample of copy slanting on only the left hand side of the column. Each line of the rough copy is indented an additional number until the desired slant; then indention can start returning to the maximum column width again. Very simple to do; merely be careful and remember what was done on the rough

This is a sample of copy slanting on only the left hand side of the column. Each line of the rough copy is indented an additional number until the desired slant; then indention can start returning to the maximum column width again. Very simple to do; merely be careful and remember what was done on the rough

Figure 94

Or, maybe it would be desirable for the slant to be on the right hand side of the column. Each line of the rough copy is indented an additional number of increments until the desired slant is obtained; but, all finished lines start at the same point.

Or, maybe it would be desirable for the slant to be on the right hand side of the column. Each line of the rough copy is indented an additional number of increments until the desired slant is obtained; but, all finished lines start at the same point.

Figure 95

## JUSTIFYING NARROW COLUMNS

The position of margin stops normally controls the width of columns that can be justified. The closest that margin stops can be placed is  $1\frac{1}{2}$ " apart. However, columns narrower than  $1\frac{1}{2}$ " can be justified, providing there are at least two words in each line. Narrow column widths are indented in the same way as right margin indentations, using the following steps:

1. Determine number of increments in desired column width.
2. Set justifier, placing margin stops as close together as possible.
3. Bank carriage and set margin pointer.
4. Type test line of "m's" and "n" or "i" to determine number of increments in line.
5. Subtract number of increments in desired column width from number in test line.
6. Return carriage to original starting point of rough copy and indent number of increments in excess of those desired. Mark new starting position on face of dial.
7. Type line of copy, tabulate, align margin pointer with "justified" starting point and compose line of copy.
8. Bank carriage for each subsequent line and use carriage release lever to bring margin pointer to new starting point for rough copy. See example below (Figure 96).

mmmmmmmmMmmmm	(15 m's - 60 incr.)
mmmmmmmmMm	(11 m's - 33 incr.) -
	desired column width
This is a sample of a narrow col- umn of copy. To accomplish this merely indent the increments not wanted and type.	This is a sample of a narrow col- umn of copy. To accomplish this merely indent the increments not wanted and type.

Figure 96

## JUSTIFYING WIDE COLUMNS

Previous instructions indicated that the widest column for which the justifier could be set was 7" (margin stops at "0" and "7", plus 2 extra teeth). Normally, this is the widest column used

for ordinary composition, for as column widths become wider, copy becomes more difficult to read. Narrow columns, from  $2\frac{1}{2}$ " to 3", used in most magazines and newspapers are easiest to read.

Wide columns may be required for contracts, legal briefs, insurance policies, as well as copy that is to be photographically reduced. To benefit readability of wide columns, a minimum of 2 points of leading should be used, preferably more.

### SETTING THE JUSTIFIER FOR $7\frac{1}{4}$ " COLUMNS

As a VariTyper Machine with a 16" carriage has a maximum writing line of 14.8", it is possible to use the regular automatic justifying method for columns up to  $7\frac{1}{4}$ " wide ( $7\frac{1}{4}$ " on rough side,  $7\frac{1}{4}$ " on finished side, and gutter space between). This is accomplished by changing the positions of the margin stops and the tabulator stop.

1. Set left margin stop at zero. Set right stop on  $7\frac{1}{2}$ ", which will give a column width of  $7\frac{1}{4}$ " inches or slightly more if needed.
2. Set tabulator stop on the tabulator scale at "104" on the "A" scale for gutter between the rough and justified copy.
3. Tabulate (after typing rough copy) and press increment back space key to reduce width of gutter before setting outer rim of margin dial for finished copy starting position. This allows maximum copy width on justified side.

### JUSTIFYING EXTRA WIDE COLUMNS

(Columns Wider Than  $7\frac{1}{4}$  Inches)

Columns wider than  $7\frac{1}{4}$ " can be justified by any of three methods: (1) manual justification as described on Page 63, (2) automatic justification by *blind typing*, or (3) automatic justification by the *line butting* method.

#### Blind Typing Method for Justifying Wide Columns

1. Set margin stops desired width apart, placing left (fixed) stop at  $1\frac{1}{2}$ " and right (removable) stop at selected width apart. For example: If column is to be 11", place left stop at  $1\frac{1}{2}$ " mark and right stop at  $12\frac{1}{2}$ ", plus 2 extra teeth.
2. Set tab stop  $\frac{1}{2}$ " beyond right margin stop.
3. Insert paper so left edge is to left of "0" on paper table scale.
4. Press automatic carriage return and paper feed key. This will bank the carriage against the left margin stop.
5. Align margin pointer for starting point.
6. Type test line and adjust to correct width.



- A Spacing = 39 increments per inch (6 picas)
- B Spacing = 43 increments per inch (6 picas)
- C Spacing = 47.5 increments per inch (6 picas)
- D Spacing = 53 increments per inch (6 picas)

7. *Blind type* copy until justifier pointer moves up on justifier dial.

NOTE: It is advisable to mark (on manuscript) the last word typed in each line.

8. Press tabulator key to activate justifying mechanism.
9. Use *carriage release lever* to return carriage to "1" on paper table scale. At this point, align outer rim of margin dial with dial pointer (beginning of finished copy).

### EXAMPLE USING BLIND TYPING METHOD

This sample column is being automatically justified by following the preceding instructions. This 5¼" width is within the justifying range of the machine, but due to the page size a wider column was not used. However, the example will illustrate the procedure for justifying extra wide columns using the blind typing method. In actual practice the rough copy and justified copy are typed line for line.

The example using the blind typing method (Figure 98) shows the rough copy which was blind typed in one block of copy, whereas, in actual practice the rough and finished copy would be composed line for line.

1. Press automatic carriage return and paper feed key.
2. Align margin pointer for rough copy.
3. Blind type rough line, marking last word typed on manuscript copy. Strive for accuracy during blind typing as it is impossible to see errors.
4. Press tabulator key.
5. Use *carriage release lever* to return carriage to approximately "1" mark on paper table scale. Finished copy begins approximately  $\frac{1}{2}$  inch in front of left stop so that line is completed before the carriage reaches the removable stop (Figure 98).
6. Align pointer (using increment space key or increment back space key) with notch in outer rim of margin dial for finished (justified) copy.
7. Compose line just blind typed.

Although this example is less than  $7\frac{1}{4}"$  in width and could be justified by ordinary methods, the technique for composing columns wider than  $7\frac{1}{4}"$  is exactly the same as listed in the steps. By using this method, it is possible to justify columns  $13"$  wide.

### Line Butting Method for Justifying Wide Columns

The *line butting* method utilizes the automatic justifier and can be employed to produce finished columns up to 9½" wide. The additional space for the finished column is obtained by reducing the width of the rough column to one-half that of the finished column. Each line is composed in two sections on both rough and justified sides of the paper. The joining or *butting* of the last half of each line to its first half (on the justified side) accounts for the descriptive name of the method—*line butting*. The steps are as follows:

#### Machine Settings:

1. Set margin stops for *one-half* desired width.
2. Adjust line to correct increment count using "m's", etc.
3. Set the line spacing device for *one-half* the desired line spacing for finished copy, as two rough copy lines will make one justified line.

#### Composing Steps:

1. Type rough copy line (first half of line may end in the middle of a word, with a space following a completed word, or with a completed word) and advance line feed lever once.
2. Tabulate and type justified copy.
3. After typing last character (or last space), mark margin dial to match the position of the pointer.
4. Set a second tabulator stop just ahead of this position.
5. *Without feeding paper*, bank carriage and type rough copy for second half of line. Although letters of rough copy lines will

overlap, they will still be readable.

- a. If first half of line ends in the *middle of a word*, begin with next letter.
- b. If first half of line ends with a *space* following a completed word, begin with next word.
- c. If first half of line ends with a *completed word*, type next word, strike space bar twice. Never start a rough copy line with a space bar stroke. The space can be placed in its proper position when justified copy is composed.

**NOTE:** Second half of a line must end with a completed or properly hyphenated word.

6. Tabulate past both tab stops and align margin pointer with mark on dial (ending point of first half of finished line).
7. Compose second half of justified line.
8. Press automatic carriage return and paper feed key. Repeat same steps for each succeeding line of copy.

To keep the space between words nearly the same on both parts of the line, allow justifier dial pointer to stop in nearly the same place on dial for both the first and second half of the line.

### ADDITIONAL EXERCISES

Exercise 11 in back of manual provides practice in setting the VariTyper Machine and composing copy requiring both justification and "run-arounds".

Exercise 12 in back of manual deals with both exceptionally narrow and extra wide columns.

### EXAMPLE USING LINE BUTTING METHOD

This example is less than a 7¼" column, but the procedure is applicable for columns wider than 7¼" and up to 9½" wide. Note that both the column width and line spacing of the rough copy are one-half that of the finished copy.

mmmmmmmmMmmmmmmmmMm

Whenever the first half of a line ends in the middle of a word, divide it on the rough side, but complete it on the justified side along with the first half of the line. When composing the second half of the justified line, blind type over that portion which is already composed and complete the rest of the line. This eliminates butting within a word.

Whenever the first half of a line ends in the middle of a word, divide it on the rough side, but complete it on the justified side along with the first half of the line. When composing the second half of the justified line, blind type over that portion which is already composed and complete the rest of the line. This eliminates butting within a word.

Figure 99

# MANUAL JUSTIFICATION

Most book type publications utilize a columnar format. Many other types of printed materials also contain blocks of copy requiring that the information be set with an evened right margin. The mechanical process of evening the right margin is called "justification".

When an operator mentally calculates and physically adds or subtracts the proper amount of space within each line to space it to the desired length, it is called "manual justification".

Copy can be manually justified on any DS Vari-Typer Machine. Some VariTyper Machines have a mechanism which automatically justifies, and most of the time this automatic method will be used. Whatever machine is used, however, it is well to have an understanding of the principle of justification.

## PREPARING THE ROUGH COPY

The following procedure lists the necessary steps to prepare the "rough" copy for manual justification and is illustrated in Figure 100.

1. Determine column width if this has not been established (in this case use a 2½ inch or 15 pica column).
2. Select proper type and make basic machine settings. (B spacing type to be used.)
3. Determine number of increments in column width for horizontal spacing being used. At "B" spacing there are 106 increments in a column 2½ inches (15 picas) wide.
4. Convert increments into "m's" plus an "n" or "i". An "m" takes 4 increments; 106 increments ÷ 4 = 26 "m's" plus 2 increments left over. An "i" takes 2 increments. This column width is equivalent to 26 "m's" plus one "i".
5. Set left margin stop (Figure 87), engage line spacing device (23), and press automatic carriage return and paper feed key (41) to bank carriage.
6. Set pointer (20c) even with vertical line (20a) for left margin starting point for copy.
7. Type 26 "m's" (using a capital "M" for every tenth one) and type one "i".
8. The margin dial pointer now indicates ending position of right margin. Move outer rim (20d) so it aligns with edge of dial pointer and mark this position on dial face (20b).
9. Type rough copy on paper. At end of each

line count number of increments over or under the correct column width. Use increment space key or increment back space key to determine this. Space several times and type number of increments. If over, use a hyphen for a minus sign to indicate that increments must be removed.

10. Remove copy from machine and mark for justification. Place a slant line in each space that an increment is to be added; if more than one increment is to be added, so designate. Place a concave mark under each space that an increment is to be removed (Figure 100).

## ROUGH COPY

mmmmmmmmMmmmmmmmmMmmmmmmmmi

(26 "m's" plus 1 "i" = 106 inc.)

Modern\man\must learn to break the ten- 2  
sions of daily living or the tensions will 0  
break\him.\He\must\learn\to\bend\with 7  
the stresses and strains like a tree in the -3  
wind,\and\spring erect \again\after\the 8  
storm\has\passed.\He\first\relaxe\his 6  
mind by thinking thoughts of peace, quiet- 4  
ness and tranquillity. He strives to enrry -1  
an\inner\serenity with\him\so that even 4  
amid a\whirl of nctivity he will not\lose 2  
his poise.

Figure 100

## FINISHED COPY

Modern man must learn to break the tensions of daily living or the tensions will break him. He must learn to bend with the stresses and strains like a tree in the wind, and spring erect again after the storm has passed. He first relaxes his mind by thinking thoughts of peace, quietness and tranquillity. He strives to carry an inner serenity with him so that even amid a whirl of activity he will not lose his poise.

## ASSIGNMENT

Using the same text as in Figure 100, prepare a rough draft (3 inches wide—128 increments at "B" spacing) and manually justify it within this 3 inch column.

# COPYFITTING

## Theory and Techniques

One of the DS VariTyper Machine's major features (its ability to use different sizes of type) is dramatically illustrated below (Figure 101).

On occasion, every VariTyper Machine operator will have to recompose a job or a section of copy because it will not fit properly in the finished layout. This repetitive effort is costly and time consuming and points out the need to know how to choose the proper size type and line spacing for the job before beginning the composition. It is the purpose of this section to instruct VariTyper Machine operators in the techniques of this process of "Copyfitting".

*Copyfitting* is most often thought of as the process of determining how to compose finished copy to fit in a given printing area. However, this is only one copyfitting problem and is classified as "*Fitting Copy to Space*".

The reverse of this, is the problem of determining how much space is needed

for copy when it is composed according to certain specifications. For instance, how much vertical space will be needed for an article composed in a 3" (18 pica) column using a 10 point type set solid? This copyfitting problem is classified as "*Fitting Space to Copy*".

Copy falls into two general categories: (1) *text matter*, and (2) *non-text matter*. Since the procedures for copyfitting the two vary, they shall be explained separately.

The following terms are used frequently in this section—"*line, line of copy, etc.*" (referring to text matter), "*entry, item, etc.*" (referring to non-text matter). Keep in mind that whether a *line* or *entry* consists of copy which fills the entire horizontal width of the copy area, or is a single word or figure it will still occupy the same amount of vertical space. Hence, these terms are identical in meaning when describing vertical space occupied by copy.

Different sizes of type are essential when composing information to fit into selected layouts or printing areas.

630-12A Type  
Copy Area:  
10 picas wide  
5 picas deep

Different sizes of type are essential when composing information to fit into selected layouts or printing areas.

630-10B Type  
Copy Area:  
9 picas wide  
4 picas deep

Different sizes of type are essential when composing information to fit into selected layouts or printing areas.

630-8C Type  
Copy Area:  
8 picas wide  
3½ picas deep

Different sizes of type are essential when composing information to fit into selected layouts or printing areas.

630-6D Type  
Copy Area:  
7½ picas wide  
2½ picas deep

Figure 101

## COPYFITTING NON-TEXT MATTER

Columns of figures, rosters, tables of contents are examples of *non-text matter*. Positioning this kind of copy on a page requires two types of planning: (1) *Horizontal plotting*—calculations for positioning copy across the page (described under the sections covering composition of Forms and Tabular Copy—Pages 40 and 49), and (2) *vertical copyfitting*—calculations for positioning copy down the page to fill-out the printing depth.

### VERTICAL COPYFITTING

The preliminary steps for vertical copyfitting are: (1) to count the number of lines or entries, and (2) to convert the vertical copy area into points.

#### CONVERTING THE VERTICAL COPY AREA INTO POINTS

The vertical copy area (also referred to as copy depth) is usually given in picas or inches.

1. To convert picas to points; multiply the number of picas by 12 points per pica.
2. To convert inches to points; multiply the number of inches by 72 points per inch.

#### FORMULA FOR VERTICAL COPYFITTING

After converting the depth of the copy area into points and counting the number of entries, the following formula can be used:

1. Depth of printing area (in points)  
DIVIDED BY
2. Total number of lines  
GIVES
3. The line spacing (in points).

The following examples illustrate the use of the formula for vertical copyfitting.

#### VERTICAL COPYFITTING – PROBLEM 1

**Problem:** Fit 12 lines of copy into an area 10 picas deep.

##### Converting Copy Depth into Points:

$10 \text{ picas} \times 12 \text{ points per pica} = 120 \text{ points}$

1. Depth of printing area (120 points)  
DIVIDED BY
2. Total number of lines (12 lines)  
GIVES
3. Line spacing (10 points per line).

**Comments:** Although the size of type was not indicated, the operator knows (according to the

calculations) the largest type that can be used is a 10 point type.

#### FINISHED COPY—PROBLEM 1

1	Fifth Avenue
2	Lincoln Park
3	Times Square
4	Bois de Boulogne
5	Piazza delle Terme
6	Drake Hotel
7	Picadilly Circus
8	Palais Royal
9	Shedd Aquarium
10	Spassky Gate
11	Golden Gate Bridge
12	Puente de Segovia

Figure 102

#### VERTICAL COPYFITTING – PROBLEM 2

**Problem:** Fit 12 lines of copy into a printing area  $11\frac{1}{2}$  picas deep.

##### Converting Copy Depth into Points:

$11\frac{1}{2} \text{ picas} \times 12 \text{ points per pica} = 138 \text{ points}$

1. Depth of printing area (138 points)  
DIVIDED BY
2. Total number of lines (12 lines)  
GIVES
3. Line spacing, 11 points per line, plus 6 additional points.

**Comments:** What happens to the extra 6 points? Since there are 12 lines of copy, the 6 points can be broken down into 12 half spaces to be added to the line spacing of each entry. Step three would then read:

3. Line spacing ( $11\frac{1}{2}$  points per line).

#### FINISHED COPY—PROBLEM 2

1	Thirty Years' War
2	Civil War (United States)
3	Battle of Gettysburg
4	War of 1812
5	Shay's Rebellion
6	Napoleonic Wars
7	Fall of Rome
8	War of the Roses
9	Franco/Prussian War
10	Louisiana Purchase
11	World War I
12	World War II

Figure 103

## VERTICAL COPYFITTING – PROBLEM 3

**Problem:** Fit 20 lines of copy into a printing area  $2\frac{1}{4}$  inches deep.

### Converting Copy Depth into Points:

$2\frac{1}{4}$  inches  $\times$  72 points per inch = 162 points


1. Depth of printing area (162 points)  
DIVIDED BY
2. Total number of lines (20 lines)  
GIVES
3. Line spacing, 8 points per line, plus 2 additional points.

**Comments:** What happens to the extra 2 points of space?

1. If the copy is a single column, forget about the 2 points. This small amount of extra space will not be noticeable.
2. However, if the column is part of a page which contains two or more columns, and the last entry of each column must end at the same vertical position, the 2 points of space can be distributed somewhere between the lines:
  - a. If there are breaks within the column (sub-headings, illustrations, etc.) distribute the space above and below these items.
  - b. If there are no breaks within the column, always distribute the extra space ( $\frac{1}{2}$  point per line) beginning with the second line (between the first and second lines) and each line thereafter, until it is used.

**NOTE:** This technique eliminates having to decide where to distribute the space and trying to remember if it was distributed.

### FINISHED COPY – PROBLEM 3



h .....	hour(s)
H .....	hardness
ha .....	hectare(s)
Hab .....	Habakkuk
Hag .....	Haggai
Heb .....	Hebrew(s)
Her .....	Heraldry
HG .....	High German
Hind .....	Hindustani
hist .....	historian
Hist .....	Historical, History
hl .....	hectoliter(s)
HM .....	His (or Her) Majesty('s)
Horol .....	Horology
Hort .....	Horticulture
Hos .....	Hosea
hp .....	horsepower
hr .....	hour(s)
Hung .....	Hungarian
Hydraul .....	Hydraulic(s)

Figure 104

## VERTICAL COPYFITTING – PROBLEM 4

**Problem:** Fit 24 lines of copy into a printing area  $2\frac{1}{2}$  inches deep, and determine which size of type in the Bookman (630) Series to use.


### Converting Copy Depth into Points:

$2\frac{1}{2}$  inches  $\times$  72 points per inch = 180 points

1. Depth of printing area (180 points)  
DIVIDED BY
2. Total number of lines (24 lines)  
GIVES
3. Line spacing ( $7\frac{1}{2}$  points per line).

**Comments:** The 6 point Bookman type (630-6D) must be used since the next size in this family is an 8 point type which should not be set at  $7\frac{1}{2}$  point line spacing.

### FINISHED COPY – PROBLEM 4



Abbreviations
Acknowledgement
Adjectives
Administration
Adverbs
Advertising
Agencies
Airplanes
Almanacs
Alphabetizing
Alterations
Announcement
Apocrypha
Apostrophe
Appendix
Apposition
Article
Associations
Astrophysics
Bibliography
Capitalization
Captions
Chemistry
Collate

Figure 105

See pages 22 and 23 for instructions on using Line Spacing Scale for vertical copyfitting and measuring layouts.

### ASSIGNMENT

Exercise 13 in back of manual provides practice in mastering Vertical Copyfitting techniques.

Using Exercise 9 in back of manual change instructions to read:

**PART A** – Choosing the correct size type, set in a column 7 inches wide and  $2\frac{1}{2}$  inches deep.

**PART B** – Choose a type size that will fit in a copy area  $35\frac{1}{2}$  picas wide and 18 picas deep.

## COPYFITTING TEXT MATTER

Copyfitting of text matter also employs vertical copyfitting techniques already learned. However, in order to use these techniques text matter (usually presented in typewritten manuscript form) must first be broken down into lines of copy.

### THE CHARACTER COUNT METHOD

The system of reducing text matter to lines of copy is called the "*Character Count Method*" of estimating or measuring copy. Fundamentally, this consists of breaking down the manuscript into individual letters, punctuation marks and spaces, and then making due allowance for each character when composing the job. This method is based upon the fact that each time a key or the space bar on a typewriter is depressed, and the carriage moves one notch to the left, a corresponding key must be pressed when setting the manuscript on a Differential Spacing VariTyper Machine.

Since typewritten manuscripts (Figure 106) are an integral part of this system, the procedures for manuscript preparation will be presented first, followed by the suggested method for measuring them. Both types of copyfitting problems, "*Fitting Space to Copy*", and "*Fitting Copy to Space*" will be covered.

### PREPARING MANUSCRIPT COPY

Manuscript preparation is very important to the copyfitting system. The following are general rules covering its preparation.

1. The manuscript should be typewritten and double spaced on one side of an 8½ x 11 sheet, with at least a one inch margin on all sides.
2. The original, and an extra copy if it is lengthy, should be submitted for composition to enable more than one operator to work on it. Another copy should be retained by the author.
3. Editing should be done before preparation of the final manuscript so it will be as free as possible of handwritten corrections and changes. Slight corrections and changes may be tolerated, if they are typed or clearly written in ink between lines, with a clear indication of their locations in the copy.
4. Pages should be consecutively numbered, fastened together with a paper clip, but never stapled.

### SAMPLE TYPEWRITTEN MANUSCRIPT

It is true that swords are often beaten into plowshares, and many developments and inventions inspired by wartime necessity are immediately adaptable to peacetime pursuits.

Today, the VariTyper Machine is an accepted tool in thousands of offices the world over. Forms, newspapers, catalogues, manuals...there is not a composition task that is not being done and done well, on VariTyper Composing Machines. The old Hammond typewriter has come a long way. The descendent of the machine that President Wilson called his "pen" has become the world's type composer -- the VariTyper Composing Machine.

Figure 106

## MEASURING TYPEWRITTEN MANUSCRIPTS

The character count method of estimating copy begins with determining the number of characters in a typewritten manuscript. Each page, and when necessary, each paragraph should be measured separately for accuracy. The following steps are to be used for measuring ordinary typewritten manuscripts (Figure 107).

1. Determine the average length line on the page and draw a rule down through the copy at this point.
2. Count the number of characters in an average line, including spaces between words and spaces indented.
3. Count the number of average length lines on the page.
  - a. Lines approximately one-half in length may be combined and figured as one line.
  - b. Count the characters of very short lines separately.
4. Multiply the number of characters in the determined average length line by the number of lines. Add the number of characters in lines counted separately to this total. This will give the approximate number of characters on the page.

EXAMPLE — Measuring a Typewritten Manuscript  
The following steps were used to determine the total number of characters in the sample manuscript (Figure 107).

1. A rule was drawn for the average length line at 62 characters.
2. Number of average length lines — 8 lines.
3. Characters per line  $\times$  number of lines ( $62 \times 8$ ) = 496 characters.
4. Two lines of approximately 50 characters each = 100 additional characters.
5. Add together,  $496 + 100 = 596$  characters, or rounded off — 600 total characters.

For convenience, this manuscript (Figure 107) will be used for the copyfitting problems presented in this section.

## FITTING SPACE TO COPY FORMULA FOR FITTING SPACE TO COPY

1. Total number of typewritten characters  
DIVIDED BY
2. Number of VariTyper characters that can be composed in a finished line of copy  
GIVES
3. The number of VariTyper lines.

### SAMPLE TYPEWRITTEN MANUSCRIPT

1 2 3 4 5 6  
1234567890123456789012345678901234567890123456789012345

It is true that swords are often beaten into plowshares, and many developments and inventions inspired by wartime necessity are immediately adaptable to peacetime pursuits.

Today, the VariTyper Machine is an accepted tool in thousands of offices the world over. Forms, newspapers, catalogues, manuals...there is not a composition task that is not being done and done well, on VariTyper Composing Machines. The old Hammond typewriter has come a long way. The descendent of the machine that President Wilson called his "pen" has become the world's type composer -- the VariTyper Composing Machine.



### MEASURING TYPEWRITTEN MANUSCRIPT

As shown, the sample typewritten manuscript in Figure 107 was found to contain 600 characters.

### FITTING SPACE TO COPY—PROBLEM I

**Problem:** Determine the vertical space required for a manuscript when composed as follows:

1. The finished column width is 3 inches (3 inches  $\times$  6 picas per inch = 18 picas).
2. Copy is to be set using a 10 point "B" spacing type.
3. Lines are to be spaced 12 points apart.

### FINDING THE NUMBER OF VARIETYPER CHARACTERS PER LINE OF FINISHED COPY

After determining the total number of characters in the manuscript, the next step is to find the number of Varietyper characters that can be composed in a finished line of copy.

To do this, it is essential to know: (1) the column width for the finished copy, and (2) the horizontal spacing of the type to be used.

After these are known, use the *Horizontal Copyfitting Calculator* (Page 52) if one is available or use the *Horizontal Copyfitting Chart* (Page 53) to determine the number of Varietyper characters that can be composed in a given line.

#### Using the Horizontal Copyfitting Calculator

The Horizontal Copyfitting Calculator was used for this problem as follows:

1. Slide the *cursor* (of calculator), matching its pointer with the 18 pica mark of the scale at the top of the calculator (Figure 108).
2. The "B" window reads 47 as the character count for an 18 pica line.

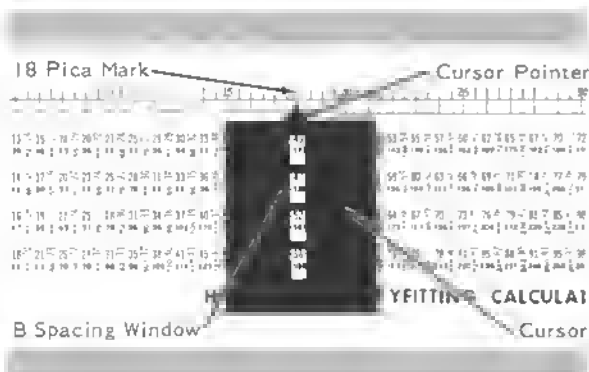


Figure 108

Therefore, the average number of DS characters that can be composed in a line 18 picas wide using a "B" spacing type is 47.

### FINDING THE NUMBER OF VARIETYPER LINES

To illustrate this step the copyfitting formula will be applied.

1. Total number of typewritten characters (600)  
DIVIDED BY

2. Number of Varietyper characters in one line (47)

GIVES

3. Number of Varietyper lines (13)—12 full lines plus 36 extra characters which require the same amount of vertical space as a complete line.

### FINDING THE VERTICAL SPACE REQUIRED FOR COPY

For this particular problem this step can be calculated instantly because the copy was to be composed at 12 point (1 pica) line spacing. 13 lines will require 13 picas of vertical space.

### FINISHED COPY—PROBLEM I

It is true that swords are often beaten into plowshares, and many developments and inventions inspired by wartime necessity are immediately adaptable to peacetime pursuits.

Today, the Varietyper Machine is an accepted tool in thousands of offices the world over. Forms, newspapers, catalogues, manuals... there is not a composition task that is not being done and done well, on Varietyper Composing Machines. The old Hammond typewriter has come a long way. The descendent of the machine that President Wilson called his "pen" has become the world's type composer—the Varietyper Composing Machine.

Figure 109

### SUMMARY—FITTING SPACE TO COPY

*Fitting Space to Copy* is by far the simplest kind of copyfitting of text matter because the size of type, column width and at least the minimum line spacing (same as type size) are known factors.

This type of copyfitting, therefore, is merely done to determine how much space to allow for copy. When the entire layout is figured and it is found that there is still too much space, the copy can be leaded accordingly to fill out the extra space. On the other hand, if there is too much copy for the layout, it is a simple process to determine the amount of line reduction necessary to fit the layout.

## FITTING COPY TO SPACE

The essential copyfitting techniques for fitting text copy into an allocated printing area (*Fitting Copy to Space*) have actually been covered in the preceding pages. They merely require rearranging in order to be used.

However, before these steps are presented, compare the two types of problems for copyfitting text matter from the standpoint of known and unknown factors concerning the finished copy or its layout.

When *Fitting Space to Copy* there are two known factors: (1) the column width, and (2) the horizontal spacing of the type to be used.

It is therefore, a simple process to use the Horizontal Copyfitting Calculator (or Horizontal Copyfitting Chart, Page 53) to determine the character count per finished line of copy to break the manuscript down into lines. The unknown factor is how much vertical space will be required for the copy. Once the number of copy lines is known, this is simple to determine.

When *Fitting Copy to Space* the only known factor is the column's width and depth. The unknown factor which must be determined is the size of type which will enable the copy to be fitted into the printing area. This is accomplished by breaking the manuscript down into lines of copy and then seeing if the number of lines of copy will fit in the vertical space.

Remember, in order to break the manuscript down into lines of copy, it is essential to know: (1) the column width, and (2) the horizontal spacing of the type. As the column width is known, the Horizontal Copyfitting Calculator (or Chart) can be used to determine the character count per line for the four horizontal spacings. An operator can start by figuring the character count per line for "A" spacing types. If copy will not fit, it can be refigured for "B" spacing types, etc., until the correct size is determined. The arithmetic calculations for all four spacings will take only a few minutes. However, even with only limited practice using this copyfitting method operators seem to sense which types are too large or too small. Hence, the trial calculations usually begin with the spacing which seems to be the most logical one for the job.

The steps for *Fitting Copy to Space* occur in two stages: (1) preliminary steps, and (2) use of a copyfitting formula.

## PRELIMINARY STEPS FOR FITTING COPY TO SPACE

The following steps are necessary before using the *Formula for Fitting Copy to Space*.

1. Determine total number of characters in manuscript.
2. Calculate finished printing depth in points.
3. Find a tentative character count for a finished line of copy—which is necessary to break the manuscript down into lines of copy.

**NOTE:** The third step requires that the operator make a value judgment as to which horizontal spacing to try first. As mentioned, it can be based on a logical evaluation, taking into account the amount of copy in the typewritten manuscript and the size of type for the column width. For instance, narrow columns—small types; wide columns—large types (except for specialized types of composition).

## FORMULA FOR FITTING COPY TO SPACE

1. Total number of characters in manuscript  
DIVIDED BY
2. Number of VariType characters in one line  
of the specified column width  
GIVES
3. The number of VariType lines.
4. Depth of printing area (in points)  
DIVIDED BY
5. The number of lines of copy  
GIVES
6. The line spacing (in points) for the copy.

## FITTING COPY TO SPACE — PROBLEM I

**Problem:** Fit a manuscript of 600 characters in an area 18 picas wide by 15 picas deep.

## PRELIMINARY STEPS

1. Typewritten manuscript (Figure 106) has 600 characters.
2. Printing area depth (15 picas) is converted into points—15 picas  $\times$  12 points per pica = 180 points.
3. In determining the most logical size of type to use, an experienced operator will first try a 10 point type for an 18 pica column—a 10 point type (most of which write at "B" spacing) and "B" spacing will be used. Using the Horizontal Copyfitting Calculator or the Horizontal Copyfitting Chart (Page 53) it is found that 47 VariType characters can be composed in a column 18 picas wide, using "B" spacing.

#### APPLYING THE FORMULA FOR FITTING COPY TO SPACE

1. Total number of characters in the manuscript (600 characters)

DIVIDED BY

2. Number of VariTyper characters in one line (47 characters)

GIVES

3. Number of VariTyper lines (13 lines) — 12 full lines plus 36 additional characters which require the same amount of vertical space as a complete line.

4. Depth of printing area (180 points)

DIVIDED BY

5. Number of lines of copy (13 lines)

GIVES

6. Line spacing in points (14 points) — actual calculation is 13 points with 11 extra points. Since the first line does not require the full 13 points, the remaining 12 can be set at 14 point line spacing and still remain within the 15 pica depth.

#### FINISHED COPY — PROBLEM 1

It is true that swords are often beaten into plowshares, and many developments and inventions inspired by wartime necessity are immediately adaptable to peacetime pursuits.

Today, the VariTyper Machine is an accepted tool in thousands of offices the world over. Forms, newspapers, catalogues, manuals . . . there is not a composition task that is not being done, and done well, on VariTyper Composing Machines. The old Hammond typewriter has come a long way. The descendent of the machine that President Wilson called his "pen" has become the world's type composer — the VariTyper Composing Machine.

Figure 110

#### FITTING COPY TO SPACE — PROBLEM 2

**Problem:** Fit 600 typewritten characters into a printing area 13 picas wide by 13 picas deep.

##### PRELIMINARY STEPS

1. Typewritten manuscript (Figure 106) has 600 characters.
2. Printing area depth (13 picas) is converted

into points — 13 picas  $\times$  12 points per pica = 156 points.

3. In determining the most logical size of type to use, it may be possible that a 10 point type will fit. Therefore, the first attempt will be figured for a 10 point "B" spacing type.

Using the Horizontal Copyfitting Calculator (or Horizontal Copyfitting Chart, Page 53) it is found that 33 VariTyper characters can be composed in a column width of 13 picas at "B" spacing.

#### APPLYING THE FORMULA FOR FITTING COPY TO SPACE

1. Total number of characters in the manuscript (600)

DIVIDED BY

2. Number of VariTyper characters in 1 line (33)

GIVES

3. Number of VariTyper lines (19).

4. Depth of printing area (156 points)

DIVIDED BY

5. Number of lines of copy (19)

GIVES

6. Line spacing (8 points) plus 4 extra points.

**STOP:** 10 point, "B" spacing type cannot be set at 8 point line spacing, therefore, the problem must be re-figured from "Preliminary Step No. 3".

##### PRELIMINARY STEP (re-figured from 3)

3. Again, referring to the Horizontal Copyfitting Calculator or Chart, it is found that 37 VariTyper characters can be composed in a column width of 13 picas at "C" spacing.

#### APPLYING THE FORMULA FOR FITTING COPY TO SPACE

1. Total number of characters in the manuscript (600)

DIVIDED BY

2. Number of VariTyper characters in 1 line (37)

GIVES

3. Number of VariTyper lines (17).

4. Depth of printing area (156 points)

DIVIDED BY

5. Number of lines of copy (17)

GIVES

6. Line spacing (9 points) plus 3 extra points. Therefore, the 8 point, "C" spacing type can be used and the copy will fit in the printing area by using 9 point line spacing. The extra 3 points can be left between paragraphs.

## FINISHED COPY – PROBLEM 2

It is true that swords are often beaten into plowshares, and many developments and inventions inspired by wartime necessity are immediately adaptable to peacetime pursuits.

Today, the VariTyper Machine is an accepted tool in thousands of offices the world over. Forms, newspapers, catalogues, manuals...there is not a composition task that is not being done, and done well, on VariTyper Composing Machines. The old Hammond typewriter has come a long way. The descendent of the machine that President Wilson called his "pen" has become the world's type composer—the VariTyper Composing Machine.

*Figure III*

## SUMMARY – COPYFITTING TEXT MATTER

The procedures for copyfitting text matter presented thus far are probably the ones which are most commonly used. However, as in any system, certain improvements can be implemented when circumstances permit. The following pages explain how and when a simpler method for copyfitting text matter can be used.

### ASSIGNMENT

Using Exercise 10 in back of manual, change instructions to read: Copyfit the following paragraph into a printing area 24 picas wide and 19 picas deep. *NOTE:* Paragraph endings may require an extra line. To compensate for this, small blocks of copy can be calculated by paragraphs rather than the total article.

## SIMPLIFIED METHOD FOR COPYFITTING TEXT MATTER

### Cantralling the Preparation af the Final Typewritten Manuscript

There is a simpler system for copyfitting text matter which still employs the basic copyfitting techniques already presented. This system differs from the other methods in one major respect. It is based on exercising control over the preparation of the *final* typewritten manuscript furnished to the VariTyper operator.

The concept of controlling the preparation of the typewritten manuscript can best be explained by showing how it is related to the main step in the *character count method* of measuring copy—that of determining the average number of characters that can be composed in a finished line of copy, preparatory to breaking the manuscript down into lines of copy.

Instead of leaving the preparation of the final typewritten manuscript to the discretion of a typist, the VariTyper operator can specify that the margins of the typewriter be set for the *same character count* as will be contained in a finished line of copy. The manuscript will then *automatically* be broken down into lines of copy during the typing process.

There are, however, several requisites for using this system. First, the system is predicated on the assumption that permission will be given to exercise control over the typing of the *final draft* of the manuscript. Secondly, the system also depends on knowing two facts concerning the finished VariTyper copy before the deadline for preparing the final draft. These are: (1) the column width, and (2) the horizontal spacing of the type to be used—both of which are necessary for determining the character count per line of finished VariTyper copy.

This procedure is called “*Typing Manuscripts to Specified Character Counts*”. The following example illustrates the basic steps.

#### TYPING MANUSCRIPTS TO SPECIFIED CHARACTER COUNTS

##### EXAMPLE 1

A small pamphlet is to be composed on a DS VariTyper Machine. The column width (10½ picas) and horizontal spacing for the body type (8 point, “C” spacing type) are known before the final draft of the manuscript is prepared. The Horizontal

Copyfitting Calculator indicates that an average of 30 characters can be composed in a 10½ pica line, using a “C” spacing type. The typist was instructed to set the margins of the typewriter for 30 characters and not to type more than two or three characters beyond the right margin stop. The other instructions included the general procedures for typing manuscripts. A paragraph of a sample manuscript, typed according to the above directions, is shown below (Figure 112).

SAMPLE MANUSCRIPT—Typed to a Specified Character Count of 30 Characters.

1	2	3
1234567890	1234567890	1234567890
This is a sample of how a man-		
uscript was typed on plain		
paper according to a specified		
character count. The margin		
stops were set 30 spaces apart		
--the number of VariTyper char-		
acters that can be composed in		
a 10½ pica column when using C		
spacing. The copy is automatic-		
ally broken-down into lines as		
the final rough draft is typed.		
The copyfitting of this infor-		
mation is now reduced to <u>simple</u>		
<u>vertical copyfitting</u> .		

Figure 112

Upon receiving this kind of typewritten manuscript the VariTyper operator can quickly count the number of lines of copy and concentrate on vertical copyfitting.

For jobs consisting of only a few pages, or when it is only occasionally necessary to copyfit a manuscript, this method can be used very effectively by just typing on plain paper. However, it can also be refined to accommodate the copyfitting of lengthy publications (such as this manual) or for jobs which are frequently repetitive and have standardized formats such as a newspaper or weekly and monthly bulletins.

#### **PRE-PRINTED MANUSCRIPT LAYOUT SHEETS**

The refinement of this system is to have manuscript paper pre-printed with a layout consisting of guide lines and numbers for the specific job. A typical example of a pre-printed manuscript layout sheet is the one used for this manual (Figure 113, Page 75).

##### **Analysis of the Layout Sheet (Figure 113)**

1. The general information above the typing area is self-explanatory.
2. The two identical rows of (consecutive) numbers extending across the page indicate the character count per line of copy.
3. The vertical numbers in the left margin area identify the lines of copy (which are double spaced) and enable an instant tally for each page of manuscript.
4. The left margin vertical rule is the starting point for the lines of copy.
5. The right margin (solid) vertical rule indicates the stopping point for the character count of the individual job (constructed at the 47th character for this manual).
6. The broken vertical rule to the left of the right margin rule indicates the point at which a line is of sufficient length to be justified automatically on the DS VariTyper Machine. Regardless of the column width being used, this justifying rule should always be constructed seven characters to the left of the right margin rule.
7. This layout sheet was prepared on and for an elite typewriter since elite typewriters were to be used for typing the final manuscript. Another layout sheet could just as easily have been prepared on and for a pica typewriter.
8. The layout sheet was typed on paper for photo offset reproduction.

An example of how this layout sheet was used for this manual is shown on Page 76, Figure 114. Compare the typewritten copy of the layout sheet to the second and third paragraphs of column one of this page. Although the finished VariTyper copy does not match the typewritten manuscript exactly (line for line) it does contain the same number of lines.

#### **SUGGESTIONS FOR PREPARING MANUSCRIPT LAYOUT SHEETS**

The following additional information will be helpful in preparing manuscript layout sheets.

1. The original copy for manuscript layout sheets may be prepared on paper for photo offset, on direct image masters or on stencils for mimeographing.
2. The original copy must be prepared to accommodate the typewriter(s) to be used for typing the final draft. If both elite and pica typewriters are to be used, a master should be made for each typewriter.
3. Double spacing should be used to allow for at least 20 lines of copy. The lines should be numbered consecutively in the left margin.
4. A master layout sheet may be prepared for individual jobs by drawing the three vertical lines on the master.
5. A master layout sheet may also be prepared to accommodate a variety of jobs of different column widths, in which case the following instructions may be used:
  - a. The two rows of numbers (for the character count per line of copy) can be extended across the entire page to include the character count for the maximum column width that will be used.
  - b. The left margin rule may be drawn on the master copy.
  - c. The right column rule and the "justifying rule" should be omitted on the master copy, in lieu of drawing them on the individual pre-printed manuscript sheets —
    - (1) The right column rule should be drawn with a black or blue pen or pencil.
    - (2) The "justifying rule" may be drawn as a solid rule, but identified by using a colored (red, green, etc.) marker.

# LAYOUT FOR TYPING MANUSCRIPTS TO SPECIFIED CHARACTER COUNTS

(For use with Elite Typewriters)

Page \_\_\_\_ of \_\_\_\_ Pages

Job Title \_\_\_\_\_ Finished Column Width \_\_\_\_\_

Type Style & Size \_\_\_\_\_ No. VT Characters/Column Width \_\_\_\_\_

	1				2				3				4				5				6				7			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1																												
2																												
3																												
4																												
5																												
6																												
7																												
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16																												
17																												
18																												
19																												
20																												
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

# LAYOUT FOR TYPING MANUSCRIPTS TO SPECIFIED CHARACTER COUNTS

(For use with Elite Typewriters)

Page \_\_\_\_ of \_\_\_\_ Pages

Job Title \_\_\_\_\_ Finished Column Width \_\_\_\_\_

Type Style & Size \_\_\_\_\_ No. VT Characters/Column Width \_\_\_\_\_

	1	2	3	4	5	6	7
	123456789012345678901234567890123456789012345678901234567890						
1	For jobs consisting of only a few pages, or when						
2	it is only occasionally necessary to copy fit a						
3	manuscript, this method can be used very effec-						
4	tively by just typing on plain paper. However, it						
5	can also be refined to accommodate the copyfit-						
6	ting of lengthy publications (such as this man-						
7	ual) or for jobs which are frequently repetitive						
8	that have standardized formats such as a news-						
9	paper or weekly and monthly bulletins.						
10	PRE-PRINTED MANUSCRIPT LAYOUT SHEETS						
11	The refinement of this system is to have manu-						
12	script paper pre-printed with a layout consisting						
13	of guide lines and numbers, for the specific job.						
14	A typical example of a pre-printed manuscript						
15	layout sheet is the one used for this manual						
16	(Figure 102, Page 64).						
17							
18							
19							
20							
	123456789012345678901234567890123456789012345678901234567890						
	1	2	3	4	5	6	7



Supervisors and owners of VariTyper Machines will readily see the value of saving time and money by using this system of *Typing Manuscripts to Specified Character Counts*. However, its effectiveness depends upon the typist's understanding the system and using it accurately. Therefore, the following suggestions for the use of the pre-printed manuscript paper are offered as a guide for instructing typists.

#### **INSTRUCTIONS TO TYPISTS USING PRE-PRINTED MANUSCRIPT PAPER**

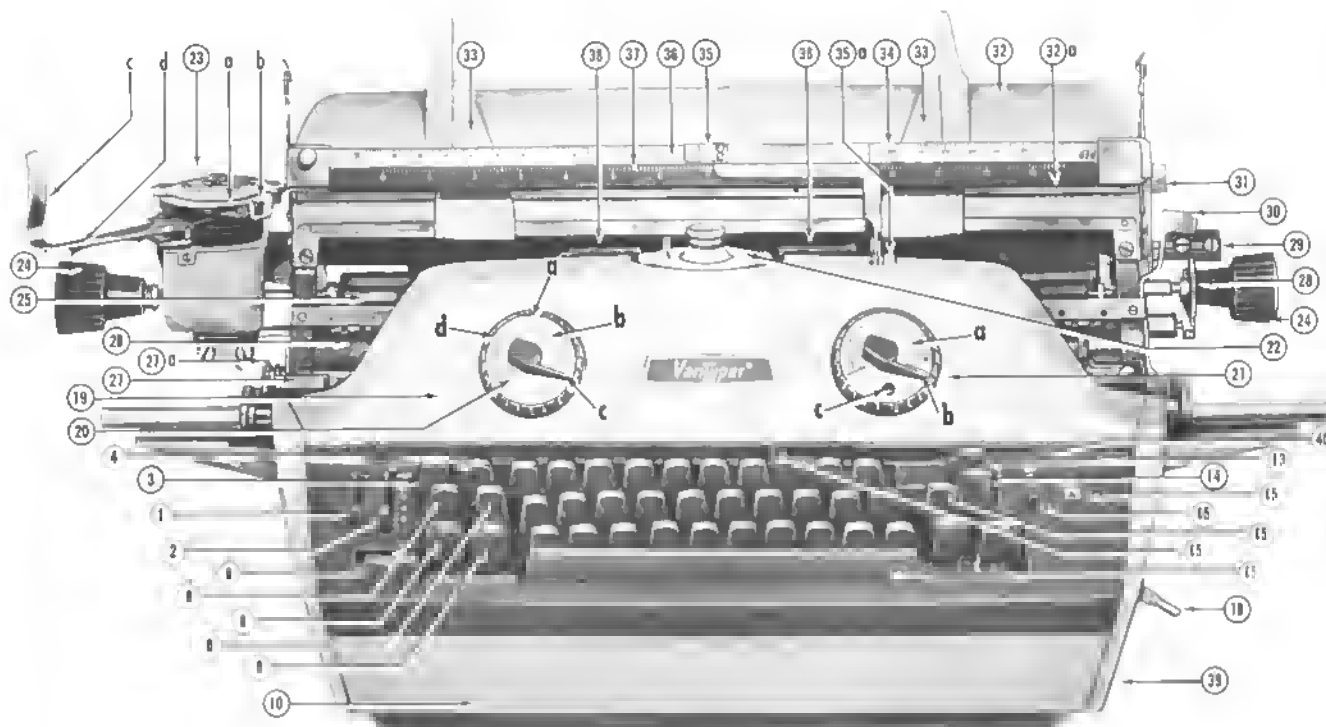
1. Make sure the layout sheet matches the spacing of the typewriter (pica or elite).
2. Place the paper in the carriage so that the first letter (or character) of each line falls just inside the left margin rule.
3. Set the margin stops according to the number of characters indicated.

4. Use double spacing and position the first line with number "1" in the left margin.
5. Type across the sheet. The broken line (which is 7 characters before the right margin rule) indicates a line of sufficient length to automatically justify on DS VariTyper Machines. All lines which are to be justified must touch or extend beyond this broken line.
6. It is permissible to type lines which extend 2 or 3 characters beyond the right margin rule; however, this should not become the general practice.
7. Start each section or chapter on a new sheet.

#### **TYPING ON PLAIN PAPER**

If this system is to be used and pre-printed manuscript paper is not available, the typist should be instructed in the procedure (Page 73).

# VARITYPER 660F



## NOMENCLATURE

- |   |                            |                                 |
|---|----------------------------|---------------------------------|
| 1. Type Change Lever                      | 19. Front Cover            | 26. Paper Basket                |
| 2. Impression Control Lever               | 20. Margin Dial            | 27. Margin Scale                |
| 3. Repeat Key                             | a. Vertical Line           | a. Justifier Dial Adjuster Knob |
| 4. Increment Space Key                    | b. Face                    | 28. VariLine Gear               |
| 5. Figure Lock Key                        | c. Pointer                 | 29. Actuating Bar Lock          |
| 6. Capital Lock Key                       | d. Outer Rim               | 30. Feed Roll Release Lever     |
| 7. Figure Key                             | 21. Justifier Dial         | 31. Carriage Release Lever      |
| 8. Capital Key                            | a. Face                    | 32. Paper Table                 |
| 9. Ruling Switch                          | b. Pointer                 | a. Top Metal Rail               |
| 10. Type Drawer                           | c. Light                   | 33. Paper Guides                |
| 11. Space Bar                             | 22. Anvil                  | 34. Horizontal Plotting Scale   |
| 12. Differential—Standard Lever           | 23. Line Spacing Device    | 35. Gunsight                    |
| 13. Three Increment Back Space Key        | a. Dial                    | a. Adjusting Knob               |
| 14. Increment Back Space Key              | b. Point Indicator         | 36. Horizontal Centering Scale  |
| 15. Tabulator Key                         | c. Line Feed Lever         | 37. Paper Table Scale           |
| 16. Non-Print Lever                       | d. Line Feed Control Lever | 38. Alignment Guides            |
| 17. Indicator Window (Horizontal Spacing) | 24. Feed Roll Knob         | * 39. On-Off Switch             |
| 18. Horizontal Spacing Lever              | 25. Feed Rolls             | * 40. On-Off Indicator Light    |

\* NOTE: Before typing, VariType Machine must be turned on by pressing On-Off Switch (39). On-Off Indicator Light (40) is illuminated when machine is on.

# VARITYPER 660 OPERATING CONTROLS

Controls not mentioned are located in the same position as on the VariType 720.

## ON-OFF SWITCH

The on-off switch is the same as the 720. The indicator light is located above the print/non-print lever. On-off indicator light is illuminated when machine is on.

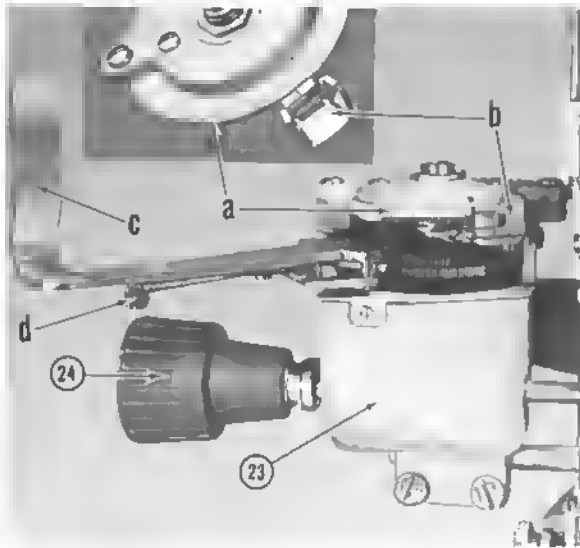
## RULING MECHANISM

To use segment types a VariType Machine must be equipped with a ruling mechanism (built into the machine at time of manufacture). The **ruling switch (9)** activates the hammer to produce an image. The switch has a "rocker" action; press left side for consecutive strokes, press right side for individual strokes. Each stroke of the ruling mechanism moves the carriage 3 increments, or one unit on the horizontal plotting scale.

## DIFF-STD LEVER

When using type fonts with identification numbers 600 or above this **diff-std lever (12)** must be positioned at "diff". When using type fonts with identification numbers under 600 and to remove the coder the lever must be positioned at "std".

## THE LINE SPACING DEVICE



The 660 line spacing device is basically the same as on the 720. The line feed lever is longer as it is used to feed paper both up and down in the machine. The line feed direction lever operates in reverse of the 720.

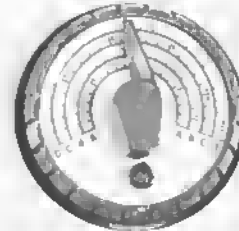
## SPACE BAR

At "diff" spacing the space bar takes 2 increments. At "std" spacing the space bar takes 3 increments.

## REPEAT KEY

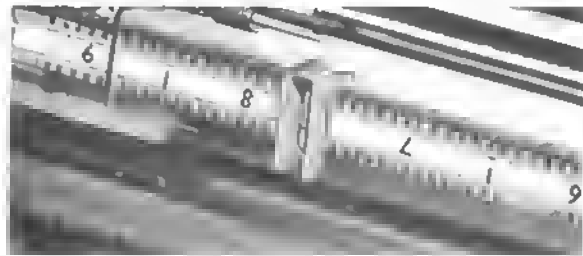
The function of the hold key and the repeat key is the same, the name has been changed.

## JUSTIFIER LIGHT



When "justifying" copy the justifier light illuminates when in the justifying area.

## TABULATION SCALE AND TABULATOR STOPS



To remove a tabulator stop, place index finger under stop and pull it straight out from scale. To insert stop, position right prong (looking from back of machine) on desired number. Hook its closed end over top of scale, then squeezing its open prongs together push stop into position.

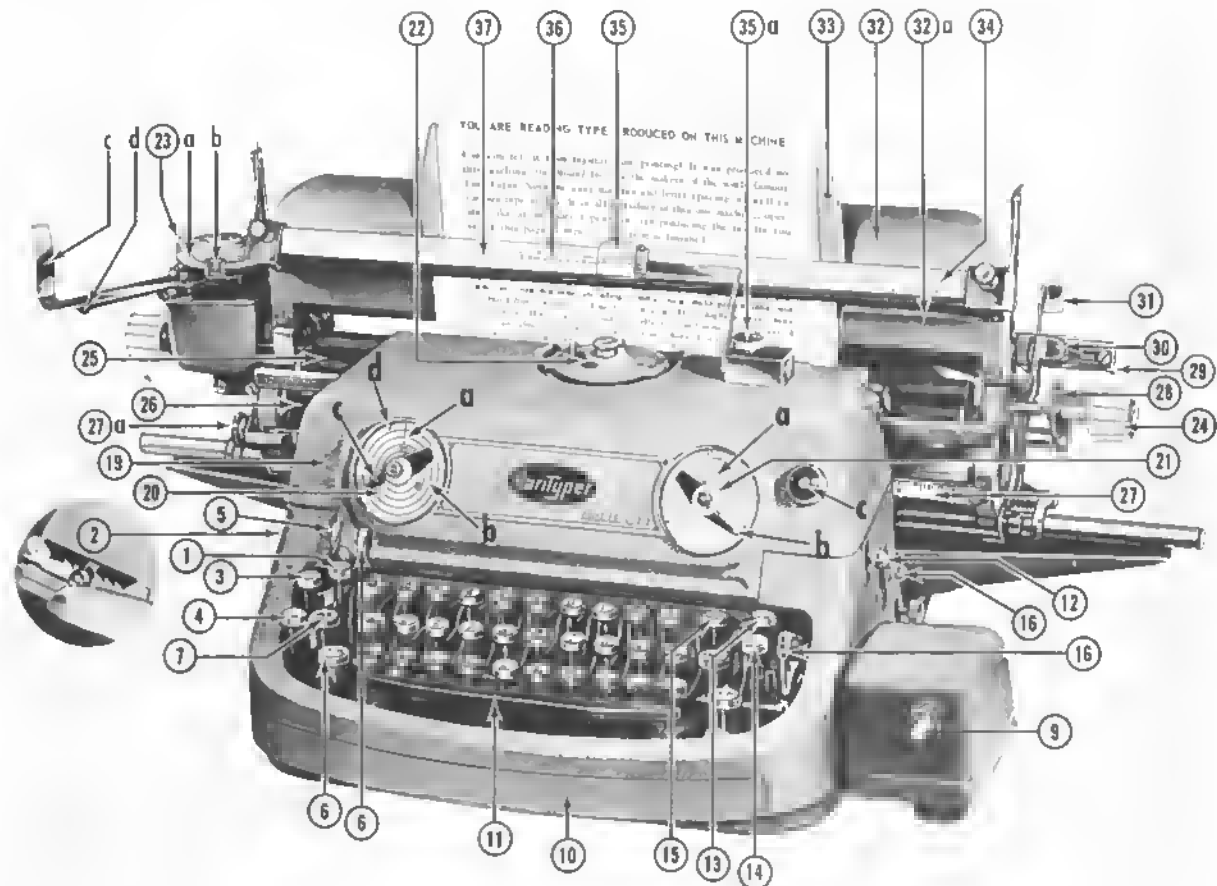
## MARGIN STOPS

When automatically justifying copy the **left and right margin stops** determine the beginning and end positions of the "rough copy", hence, the width of the column to be justified. The right margin stop is removable and is usually placed at "7" on the margin scale. To set the margin stop:

1. Squeeze the top prongs together, hook lower end under the margin scale and then hook top end over the margin scale.
2. Press top prongs together and slide along margin scale aligning its pointer with "7" on the scale.

The left margin stop is then set for the desired column width by subtracting the number from "7" and setting it at this figure. For instance, it is set at "4" for a 3 inch column ( $7 - 3 = 4$ ).

# VARITYPER 610F

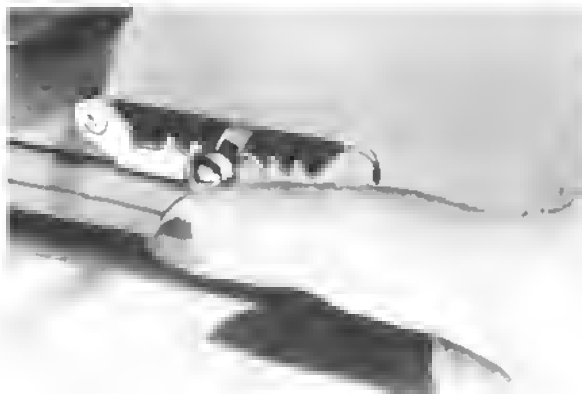


## NOMENCLATURE

- |                                    |                              |                                |
|------------------------------------|------------------------------|--------------------------------|
| 1. Type Change Key                 | 18. Horizontal Spacing Lever | 25. Feed Rolls                 |
| 2. Impression Lever (insert)       | 19. Front Cover              | 26. Paper Basket               |
| 3. Repeat Key                      | 20. Margin Dial              | 27. Margin Scale               |
| 4. Increment Space Key             | a. Vertical Line             | a. Justifier Dial              |
| 5. Figure Lock Lever               | b. Face                      | Adjuster Knob                  |
| 6. Capital Lock Lever              | c. Pointer                   | 28. VariLine Gear              |
| 7. Figure Key                      | d. Outer Rim                 | 29. Actuating Bar Lock         |
| 8. Capital Key                     | 21. Justifier Dial           | 30. Feed Roll Release Lever    |
| 9. Ruling Switch                   | a. Face                      | 31. Carriage Release Lever     |
| 10. Type Drawer                    | b. Pointer                   | 32. Paper Table                |
| 11. Space Bar                      | c. Light                     | a. Top Metal Rail              |
| 12. Differential - Standard Lever  | 22. Anvil                    | 33. Paper Guides               |
| 13. Three Increment Back Space Key | 23. Line Spacing Device      | 34. Horizontal Plotting Scale  |
| 14. Increment Back Space Key       | a. Dial                      | 35. Gunsight                   |
| 15. Tabulator Key                  | b. Point Indicator           | a. Adjusting Knob              |
| 16. Non-Print Lever                | c. Line Feed Lever           | 36. Horizontal Centering Scale |
|                                    | d. Line Feed Control Lever   | 37. Paper Table Scale          |
|                                    | 24. Feed Roll Knob           |                                |

## VARITYPER 610 OPERATING CONTROLS

Controls not mentioned are located in same position as on VariTyper 660.



### IMPRESSION CONTROL LEVER

Since a great variety of sizes, styles and weights of types can be used on a VariTyper Machine it is logical that different types require different impressions (the force with which the hammer presses the paper and carbon ribbon against the type font). The force of the hammer stroke can be varied by setting the **impression control lever (2)**, located on left side of machine. These impression settings range from 1 to 7 (the heaviest impression). The proper impression setting varies according to the type style and size. Large, bold types require a heavy impression (7), whereas a small, sharp type would need a light impression (1 or 2).

### INCREMENT SPACE KEY

The **increment space key (4)** ( $\frac{1}{2}$  space) is located to extreme left of middle row on keyboard. When pressed it will move carriage forward 1 increment.

### CAP SHIFT AND FIG SHIFT KEYS

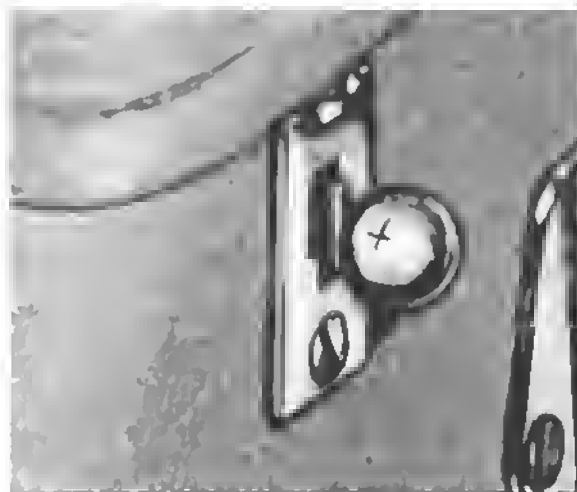
Press **cap key (8)** to raise type to print a capital letter, and press **fig key (7)** to raise type to print a figure or symbol.

### CAP LOCK LEVER AND FIG LOCK LEVER

To lock the type font in position to print all capital letters, or characters on the figure row, press cap key and pull **cap lock lever (6)** forward; or, press fig key and pull **fig lock lever (5)** forward. To unlock these keys, push their respective lock levers back.

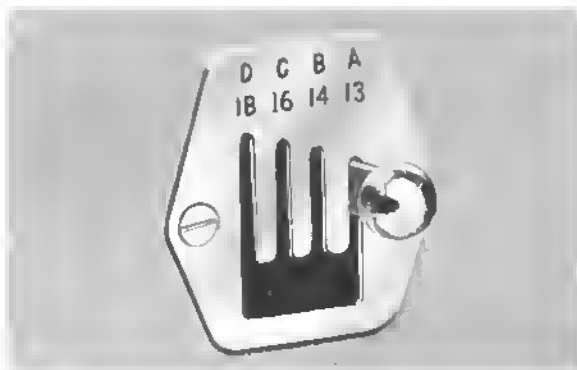
### RULING SWITCH

Ruling mechanism is equipped with a toggle ruling switch (9). For continuous action push and hold switch to left. For individual strokes push switch to right.



### DIFFERENTIAL - STANDARD LEVER

To accommodate both differential and standard spacing types on the DS VariTyper Machine a **Diff-Std lever (12)** is provided. For differential spacing the lever is pushed in. For standard spacing it is pulled out.



### HORIZONTAL SPACING LEVER

Located on right side of machine is the **horizontal spacing lever (18)** consisting of 4 different slots, each marked with a letter and a number. Lower the lever and lift into desired slot.

## CHANGING RIBBON ON VARITYPER 610



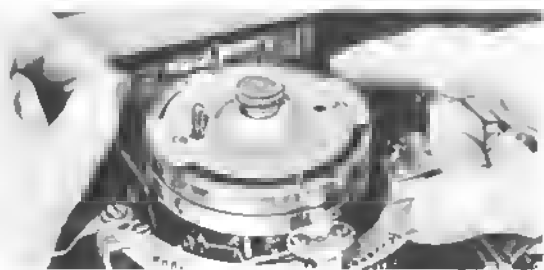
Pull carriage all the way to the right. Remove front cover carefully by lifting up and towards you. The *ribbon cup* is located on left side of machine in vertical position and is removed by grasping its top end and lifting with a slight rotating motion.



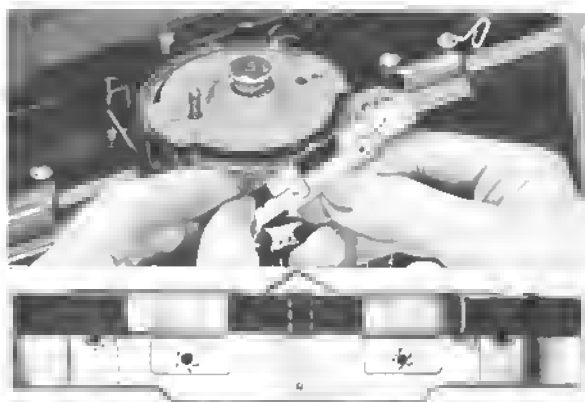
Turn the cup so that the spindle on which the ribbon turns is up. Place ribbon spool in cup, so that it turns *counterclockwise*.



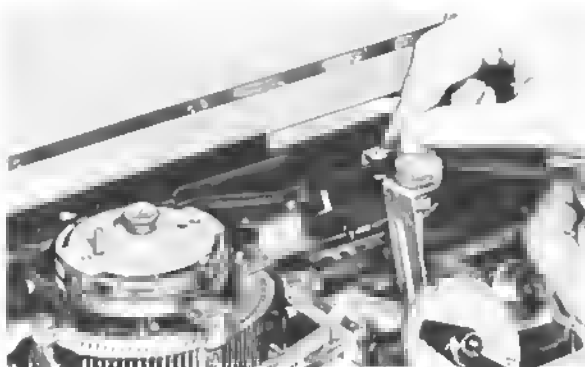
Replace ribbon cup. Make certain cup is down in machine as far as it will go. Cup is in proper operating position when ribbon pulls freely.



To remove ribbon shield from holder, press right prong of holder to *left*. Grasp shield and lift it off holder prongs.



Hold shield with pointer up and the two ribbon slots facing you. Thread ribbon through guide (left to right). Then, holding ribbon with *carbon* side away from you, thread it through the ribbon slots.



Replace shield by dropping each loop on holder prongs. Press right prong to the left when replacing shield. Pull ribbon through guide on right side until it reaches two small feeder wheels. Push back the smaller wheel and slip ribbon between wheels. Press any key on keyboard several times to see if ribbon is moving. (Ribbon will not move when you press space bar or when non-print key is set for non-print.)



On the right side of the machine, near the carriage, is a ribbon control knob which actuates the ribbon feed wheels.

Whenever you wish to feed a small amount of ribbon through the machine, turn the control knob toward you. Turn ribbon feed control knob to check if ribbon is moving.

## VARITYPER AUTO-WIND ROLLER ATTACHMENT

The Auto-Wind Roller Attachment eliminates the wooden roller previously used to roll paper masters into the VariTyper Machine. The roller (Figure 116-1) is mounted under the feed rolls and is controlled by a lever on the left side of carriage.

### OPERATING PROCEDURE

1. Hold Auto-Wind Roller release lever (Figure 115-1) forward and slowly rotate right feed roll knob toward front of machine until the release lever comes all the way forward opening the roller.
2. Open feed rolls.
3. Insert paper master. Make sure the master is fully bottomed in roller.
4. Return release lever to closed position.
5. Close feed rolls.
6. Roll paper master down by rotating feed roll knobs toward the front of the machine.
7. To remove master, simply feed it out of the machine.

To reinsert a paper master that has been removed from the roller, first straighten the bottom edge of the master then proceed as outlined above.

If necessary, the Auto-Wind Roller Attachment can be removed and reinstalled by the operator.

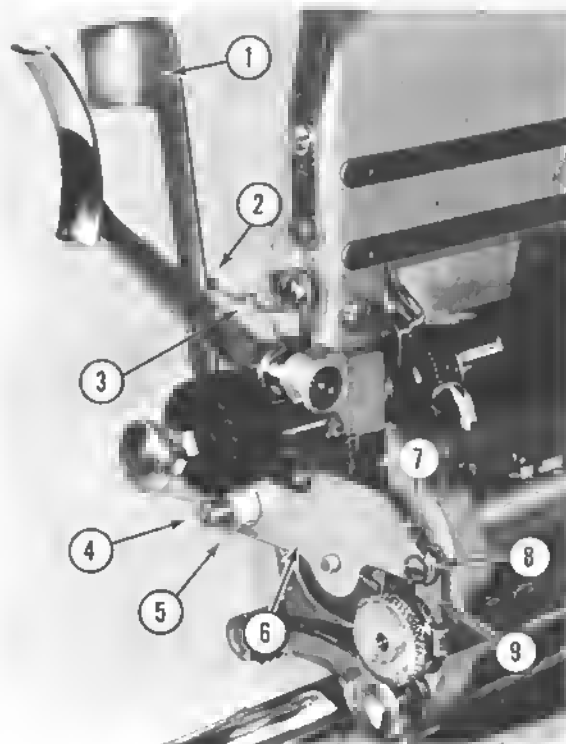


Figure 115

- |                            |  |
|----------------------------|--|
| 1 - Release Lever          | 6 - Left Roller Bracket                |
| 2 - Detent Spring Stud     | 7 - Left Roller Bracket Mounting Screw |
| 3 - Detent Spring          | 8 - Spacer                             |
| 4 - Feed Roll Hanger Shaft | 9 - Margin Rack Adjusting Stud Bracket |
| 5 - Collar                 |  |

### REMOVAL PROCEDURE

1. Remove the two screws holding right roller bracket (Figure 116-3, 4). Remove roller and bracket assembly from machine.
2. Remove collar (Figure 115-5) holding release lever (Figure 115-1) and left roller bracket (Figure 115-6).

On machines equipped with the line spacing device, the collar (Figure 115-5) cannot be removed. It is necessary only to loosen the collar screw and move collar to the left to remove left roller bracket and release lever.

3. Remove left roller bracket mounting screw and spacer (Figure 115-7, 8) and slide bracket, release lever, and release lever hub off feed roll hanger shaft (Figure 115-4).

On machines equipped with the line spacing device, pull left roller bracket and release lever off feed roll hanger shaft toward front of machine.

4. Replace bracket mounting screw.

### REINSTALLATION PROCEDURE

Reverse removal procedure.

**NOTE:** Consult your VariTyper Representative to determine which VariTyper Machines will accept this attachment.

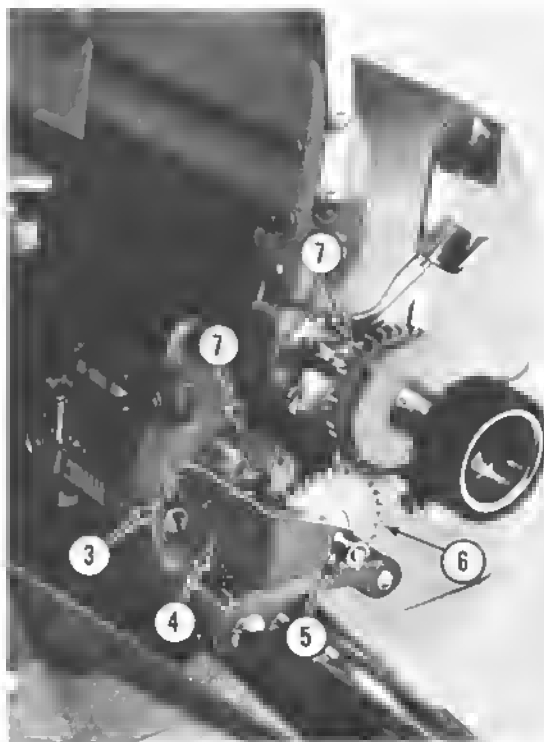


Figure 116

- |  |                                       |
|--|---------------------------------------|
| 1 - Auto-Wind Roller                     | 4 - Right Roller Bracket              |
| 2 - Feed Roll Shaft Gear                 | 5 - Auto-Wind Roller Retaining Collar |
| 3 - Right Roller Bracket Mounting Screws | 6 - Auto-Wind Roller Shaft Gear       |

# VARITYPER MACHINES TO MEET SPECIFIC NEEDS

## VARITYPER 519\* and 565\*

The primary function of the 519 and 565 VariTyper Machines is the composition of forms. As an aid to more uniform impression these models employ character suppression in addition to the regular suppression of the comma, period and hyphen punctuation marks.

These models do not have the automatic justifier mechanism. Justification is accomplished by using the "manual method" (Page 63).

Basic instructions for the operation of VariTyper 519 are the same as for VariTyper 610 and instructions for 565 are the same as for VariTyper 660. Both the 519 and the 565 have several modifications.

1. Spacing mechanism allows for one-increment characters in addition to the existing two, three, and four increment characters on conventional DS machines.
  - a. Special type fonts (5000 series) are designed to take advantage of this one-increment spacing (Figure 117).
  - b. Special one-increment coder is supplied to accommodate one-increment type fonts.
  - c. Engage one-increment spacing attachment by setting one-increment control lever in horizontal position (Figure 118).
2. Not limited to one-increment type fonts.
  - a. Replace one-increment coder with "modified" English coder (or international language type fonts and their appropriate coders).
  - b. Disengage one-increment spacing attachment by raising control lever to vertical position.

	INCREMENT CHART			
	1 Inc.	2 Inc.	3 Inc.	4 Inc.
Lower Case	i j l t . , :	a b c d e g h k n o p q s u v x y z -	m w	
Cap Shift	i . , t	B E F J K L P R S T X Y Z	A C D G H N O Q U V	M W
Fig Shift	" ( ) . ,	1 2 3 4 5 6 7 8 9 0 # \$ % ' / ' E 7	- & @	% 1/4 1/2 3/4

Space bar takes two increments

Figure 117

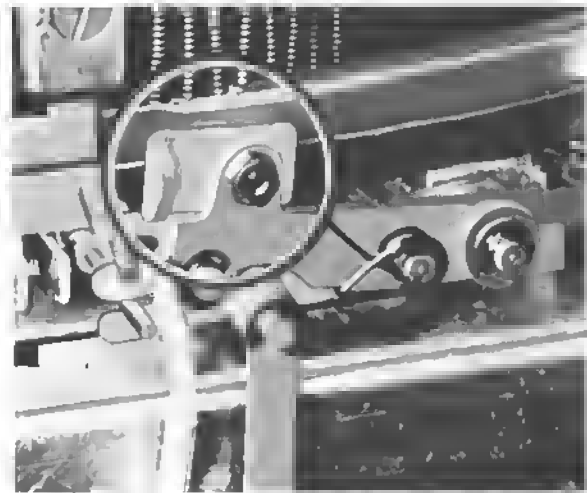


Figure 118

## VARITYPER 530\*, 584\*, and 570\*

Basic instructions for the operation of VariTyper 530 and 584 are the same as for 610. Both 530 and 584 do not have the automatic justifier. Justification is accomplished by using the "manual method" (Page 63). Either model would suffice where the major work load would be other than justified text matter. These models differ only in carriage length. The 530 is equipped with a 20 inch, open-end carriage suitable for oversize material. The 584 is equipped with the conventional 16 inch, open-end carriage (Figure 119).

VariTyper 570 comprises all the features of the 530, plus automatic ribbon rewind and on-off switch. Operator instructions are the same as for the 660. (570 has no justifying mechanism.)



Figure 119

\*"F" after machine number indicates ruling attachment



## VARITYPER 582\* and 595\*

Basic instructions for the operation of VariTyper 582 are the same as for VariTyper 610. Instructions for the operation of 595 are the same as for 660. Both the 582 and the 595 do not have the automatic justifier mechanism and have only two (2) character spacings, they are "A" and "C". Therefore, only A and C spacing type fonts will space properly on these models. Justification is accomplished by the "manual method" (Page 63). These models would suffice when the VariTyper Machine would be used for a specific job requiring only A or C spacing and a limited amount of justification.

## VARITYPER 585\*

The VariTyper Engineering Machine 585 (Figure 120) is used primarily in drafting rooms. It is designed especially for composing copy on engineering drawings. Basic instructions for the operation of this model are the same as for the 610. In addition to the features of the 610 (minus justifier mechanism), the VariTyper 585 is equipped with:

1. 24 inch, open-end carriage.
2. Upper paper basket to support upper portion of drawing or tracing during typing operation.
3. Extended levers—Carriage release lever, line feed lever and feed roll release lever are extended so they can be reached above the upper paper basket.
4. Both carbon ribbon and fabric ribbon holders.
  - a. Carbon ribbon insertion same as on the 610.
  - b. Fabric ribbon insertion.
    - (1) Remove knobs from both ribbon cups.
    - (2) Attach hook on end of fabric ribbon to center of empty spool.
    - (3) With full spool at left and empty spool at right insert ribbon into fabric ribbon shield (#1420) (Figure 121).
      - (a) Lift entire assembly and place in machine (shield insertion same as VariTyper 610).
    - (4) Ribbon control knob (Page 82) controls direction of ribbon motion.

### Optional Attachments

1. Long rollers to handle large drawings and tracings—one in paper basket to control bottom and one in upper basket to receive material as it is composed.

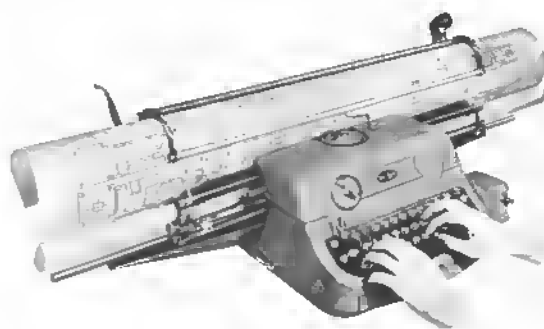


Figure 120

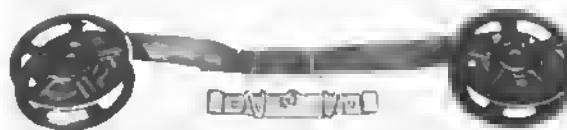


Figure 121

2. Stanchions and interlocking plastic rollers to accommodate large tracings (over 6 feet in width).

## VARITYPER 681\* and 695\*

VariTyper Machines 681 and 695 have reverse carriages to accommodate Hebrew and Arabic type composition. Both the 681 and the 695 have 3 horizontal spacings—A, B and C. Basic operation of VariTyper 681 corresponds to operation of the 610 and VariTyper 695 corresponds to the 660; both with reverse structure:

1. Marginal dial rotates counter-clockwise.
2. Marginal stops reversed—permanent stop on right side of marginal scale and removable stop on left side of scale.
3. Actuating bar lock located at left end of carriage.

Other parts remain same as on conventional DS VariTyper Machines.

## VARITYPER 900F and 940F

VariTyper 900F and 940F were designed to meet the needs of the VariTyper FotoList Camera. Operation of these two VariTyper machines are covered in a separate manual.

\*"F" after machine number indicates ruling attachment

## OPERATOR'S CHECK LIST BEFORE CONTACTING SERVICE REPRESENTATIVE

PROBLEM	SOLUTION
1. If machine stops during typing operation	1. Check to see if machine is plugged into electrical outlet. If machine is equipped with "off-on" switch check to see if it is "on".
2. If letters appear too crowded	2. Check to see if horizontal spacing lever is set at correct spacing for the type.
3. If letters are irregularly spaced	3. Check Differential—Standard—Out Lever. Lever must be pushed to the left for differential types (style numbers of 600 or above). Also, if Coder has been removed check to see if it is properly re-inserted.
4. If copy is too light	4. Set impression control lever to heavier impression setting. Check ribbon; be sure it is moving through machine.
5. If type sticks in anvil (does not return to center after a letter is struck)	5. Clean outside of anvil and anvil slot. Clean back of type.
6. If feed rolls appear shiny or glossy	6. This is usually the result of improper cleaning. Clean feed rolls thoroughly with cloth dampened with denatured alcohol. Rub well until rolls show a dull finish.
7. If paper slips in feed rolls	7. Clean feed rolls thoroughly. If paper continues to slip, have rolls adjusted by VariTyper Service Representative.
8. If machine does not justify	8. Check actuating bar lock; pull lever to right.
9. If ruled lines do not join when using forms ruling device	9. Check horizontal spacing lever to see if it is set at correct spacing for segment type being used.
10. Shield marks on copy	10. Impression too high. Dirty or damaged shield. Shield not properly positioned on prongs.

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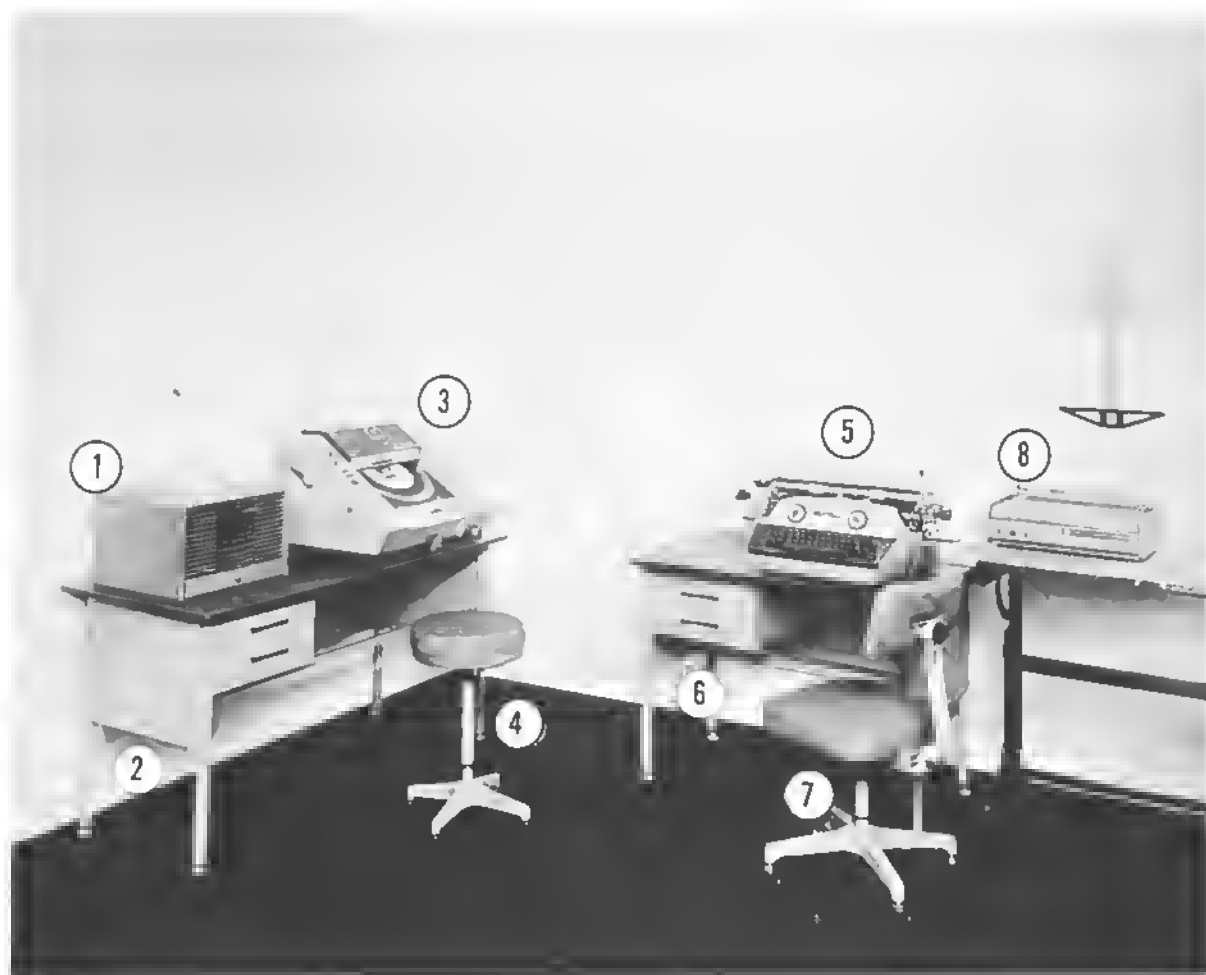
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PHONE

## A TYPICAL VARITYPER COMPOSITION DEPARTMENT



■ Type composing is a skill . . . but *typography* is an art. To this end, the Research and Development Section of the VariType Corporation dedicates a substantial measure of its time to the development of equipment and aids for better typography. The working environment of the operator is of prime importance. Illustrated here, is a typical layout of VariType equipment and accessories that provide every requirement for type composition, from body type and forms to headline and display type. The layout includes special desks and posture chairs that provide maximum convenience while minimizing fatigue. All the equipment shown here is available from your local VariType Branch Sales Office.

- ① TypeMaster Cabinet stores fifteen Headliner TypeMasters ready for instant use.
- ② Series 40 Desk has ample space for convenient Headliner operation with drawers for supply storage.
- ③ VariType Headliner 860 composes professional looking Headline and display type in many styles.
- ④ VariType Efficiency Stool No. 7150 is adjustable for maximum comfort and convenience.
- ⑤ VariType 720E Composing Machine composes body copy in hundreds of styles and sizes.
- ⑥ Series 10 Desk provides ample working area at the correct height for maximum efficiency.
- ⑦ VariType Posture Chair No. 7100 is fully adjustable for maximum comfort with minimum operator fatigue.
- ⑧ Striped Adhesive Wax Coater 30 speeds 'paste-up' by eliminating old fashioned rubber cement.

## EXERCISE I

This exercise is designed to establish the proper speed at which beginning operators should compose copy and to develop the correct technique of bottoming each key, which enables the machine to do its job.

### INSTRUCTIONS:

Type the combinations of letters as shown, all caps, using an "A" or "B" spacing type.

VTB XNS YLF GPE FKN QMJ IRZ CWA FTV  
UKL WSE PTS VWF GLN YMI RTC BWA EZQ

QYUT IERO PWQU AHLS DJGK ZNWM XCMJ  
QJND PBIK NTVL WMIC XIQU PZWH EOAI

DQOKN GPAMS XLENY CNTLQ OZMMI ZXUHT  
VEEWV NPKOM URIB FYRLX WKAHG IEAOZ

KAW FNEPZL PEN MWAOSTIH NQAMOPE NT RGUA US A ALNOKW  
ID RGW ARTOW ID RTOW XINOIAWS IB RGW CLEUROTWE NISWK

YJOD OD YJR YO,R GPT S: : HPPF ,RM YP VP,R YP YJR SOFP  
PG JOD QSTYU

BUN  
AREWWR BYNVERS

AREWWR BYNVWEA XIBRAUB DUFYEWB WQUEOPTYEU  
CLEURTOWE XIEOIELRUIB YQO DEKUBFCYTAWB LCWBYW  
BWQLEJM BWQ HWEANT

## EXERCISE 2

*INSTRUCTIONS: (Strive for perfect copy)*

Compose this paragraph, line for line, using A, B, C and D spacing types. Set the line spacing device on line spacing indicated on each type. There will be four paragraphs when finished.

**NOTE:** Save these paragraphs for future use.

### A DEDICATION

When the newspapers reported General Alfred Gruenther's gift of President Wilson's typewriter to President Kennedy, there were many who felt that the full story should be told . . . the story of the machine's conception and birth, of its years of inactivity and of its colorful resurrection. And what could be more logical than to tell this story on the very machine that is the direct descendant of Mr. Wilson's typewriter. This book, therefore, is dedicated to the President of the United States, John F. Kennedy, whose sense of history permitted him to give of his valuable time that the event may be known to the world at large. Grateful acknowledgement is made, also, to those history-conscious individuals who, appreciating the significance of the full story, urged it into print.

### STOP! BEGIN NOW, TO LEARN HOW TO EXAMINE COPY CRITICALLY.

Before proceeding to the next exercise, compare the spacing of letters in copy you composed to the spacing in the samples below.

If the letter spacing in your copy is not nearly perfect, chances are you are trying to type too fast. This will be noticeable in combinations of letters in words most frequently used, such as: the, of, to, there, who, that, be, its, etc.; or similar letter combinations in longer words.

### A DEDICATION

1000-12A

When the newspapers reported General Alfred Gruenther's gift of President Wilson's typewriter to President Kennedy, there were many who felt that the full story should be told . . . the story of the machine's conception and birth, of its years of inactivity and of its colorful resurrection. And what could be more logical than to tell this story on the very machine that is the direct descendant of Mr. Wilson's typewriter. This book, therefore, is dedicated to the President of the United States, John F. Kennedy, whose sense of history permitted him to give of his valuable time that the event may be known to the world at large. Grateful acknowledgement is made, also, to those history-conscious individuals who, appreciating the significance of the full story, urged it into print.

### A DEDICATION

1000-8C

When the newspapers reported General Alfred Gruenther's gift of President Wilson's typewriter to President Kennedy, there were many who felt that the full story should be told . . . the story of the machine's conception and birth, of its years of inactivity and of its colorful resurrection. And what could be more logical than to tell this story on the very machine that is the direct descendant of Mr. Wilson's typewriter. This book, therefore, is dedicated to the President of the United States, John F. Kennedy, whose sense of history permitted

### A DEDICATION

1010-7D

When the newspapers reported General Alfred Gruenther's gift of President Wilson's typewriter to President Kennedy, there were many who felt that the full story should be told . . . the story of the machine's conception and birth, of its years of inactivity and of its colorful resurrection. And what could be more logical than to tell this story on the very machine that is the direct descendant of Mr. Wilson's typewriter. This book, therefore, is dedicated to the President of the United States, John F. Kennedy, whose sense of history permitted



### EXERCISE 3

#### INSTRUCTIONS:

1. Select an "A" spacing type for the heading, set the horizontal spacing as indicated on type.
2. Compose the heading flush left with the body copy.
3. Select a "C" spacing type for the body copy, set the machine as indicated on the type.
4. Space two line spaces after the heading before starting the body copy — compose copy.

#### TYPE CHOICE and TYPE DESIGN

More than a thousand type faces are available for each VariTyper Machine, including special symbols, mathematical faces and engineering lettering styles, as well as most of the world's different languages. This extraordinary range of type faces is significant to the user because of the extraordinary range of applications it makes possible on the same VariTyper Machine. That is why the forms designer, the advertising manager, the house organ editor and the parts cataloging manager can all use the same VariTyper Machine...each having his type composed in a distinctive manner...to his exact specifications.

The VariTyper Machine actually appreciates in value for the user because VariTyper type designers are constantly issuing new type faces for additional applications. Although there are more than a thousand type faces now available to the VariTyper user, a large staff of highly skilled type artists is constantly at work creating new designs so that every VariTyper Machine can increase its productivity. Whether for a technical manual or a special form...for a publication or a statistical report...there are VariTyper faces to meet the individual style requirements...with results that are truly professional and attractive.

## EXERCISE 4

### INSTRUCTIONS:

1. Select *two* B spacing types. Roman type for heading and body copy, and its matching italic for underlined words in manuscript.
2. Set machine as indicated on type fonts.
3. Insert Roman style on "black" dot side of anvil. Insert Roman Italic on "red" dot side of anvil.
4. Compose heading flush with left margin. Space two line spaces after heading before starting body copy.
5. Compose paragraph line for line. Remember to swing types around by using anvil knob.

### CONCEIVED IN WAR

A young Civil War correspondent read his own dispatches in the newspapers and was dismayed and angered at the garbled way in which they had reached print. His handwritten reports had been completely misread and the printed stories were a source of embarrassment to him. There was little he could do about it; the urgency of getting his stories to the telegraph stations afforded little time for exercises in penmanship. Resignedly, he consigned his hastily written reports to the indifference of the telegraphers and typesetters. Dissatisfaction often breeds creativity, and during lulls in military action he daydreamed, conjuring up mental images of "miracle machines" that would write mechanically with printer's type. The writing would be so clear that even a careless telegrapher could transmit his stories without error. The Civil War dragged on. James B. Hammond, the young correspondent, continued to see his stories misinterpreted and misprinted. His dreams of a miraculous writing machine crystalized to the extent that he began to put them down on paper in the form of sketches. That was the beginning of the Hammond Typewriter, one of the earliest practical writing machines, the machine which was to become so closely identified with President Wilson. It was conceived in war and destined to serve in war as in peace with great distinction.

## EXERCISE 5

Exercise 5 shows the use of additional increments placed between letters or words, either for convenience or for a desired effect. This procedure is called "letterspacing".

### INSTRUCTIONS:

1. Select *two* "D" spacing types: a Roman style for body copy, and a Sans Serif style for words underlined.
2. Set horizontal spacing as indicated on the "D" spacing type font.
3. Select a "B" spacing type for the heading and the by-line. Leave the machine at "D" spacing and "letterspace" the heading and by-line: add 1 increment between letters and 6 increments between words.
4. Compose the heading, line space 2 line spaces before composing the by-line, and 2 additional line spaces before beginning the paragraphs.

### COLD TYPE COMPOSITION

on the VariTyper Machine

"COLD TYPE" is a name first applied to copy which is composed on a VariTyper Machine, by professional printers, to differentiate this method of type composition from type casting methods using molten metal or "Hot Type". The absence of heat in the VariTyper Method has gained for it the descriptive title "Cold Type".

Whatever method of reproduction is specified - offset, letterpress, mimeo or spirit duplicating - a VariTyper Machine will provide the typography for it - attractively professional in appearance - produced ~~immed~~ immediately when needed. The VariTyper method, though entirely an office operation, produces type composition that meets the exacting standards of professionally produced typography.

## EXERCISE 6

An excellent exercise to assist in learning the increment values of characters on the DS VariTyper Machine keyboard.

### INSTRUCTIONS:

1. Do not use margin stop.
2. Compose copy near center of paper.
3. Set machine for proper horizontal and vertical spacings for type being used (type style and size optional).
4. Set **margin pointer (20c)** even with **vertical line (20a)** of margin dial.
  - a. Count number of increments in each word (or, if group of words, words and spaces); press **increment back space key (14)** once for each increment counted.
  - b. Type word (or words) — the pointer will be aligned with the vertical line on margin dial when word is completed — unless, of course, increment count was not correct.
  - c. Feed paper for next word and repeat procedure.

If, after the third attempt, the count is still wrong go on to the next word. When another word does not come out correctly, compare this word with the other incorrect word(s) to see if they contain some identical letters for which the wrong increment count may have been given.

TOTAL	Danger!	(NOTE)	Whereas
SPARE	Notice:	John, Jr.	Abraham Lincoln
JOINS	4½%	grim	Roman
guide	Justice	Steam	Sans-Serif
shoes	P.A. SYSTEM	\$98.50	Model 660
Schooner	"No"	Japan	TOTAL TIME
Wm Flit, Jr.	SALE 30th	JAPAN	Anvil
\$980.72	Ic Sale	walls	"Dream"
High Fidelity	A. T. & T.	WALLS	Initiate
(Notes)	A & P	Hi-Fi	initial
Leaving?	LE 2-0300	hi-fi	water
TWICE	Justifier	8/24/64	WATER
Switch	Cheque	1-¾	9:00 A.M.

The sample below shows the desired result from this exercise — even right hand margin.

TOTAL  
SPARE  
JOINS  
guide  
shoes  
Schooner  
Wm Flit, Jr.  
\$980.72  
High Fidelity  
(Notes)  
Leaving?  
TWICE  
Switch

## EXERCISE 7

### INSTRUCTIONS:

Heading above each pre-ruled box is to be centered within that box. Select the indicated spacing types (A, B, C or D) for each group of boxes.

Shield point method of centering headings horizontally in pre-ruled boxes.

1. Align the point of the shield with the left margin of the box.
2. Engage non-print lever and blind type the heading.
3. Count the number of "m's" and/or increments used to fill out the space until the shield is aligned with the right margin of the box, and mentally divide it in half.
4. Re-align the shield point with the left margin of the box, space in two increments plus half the amount of space figured above.
5. Disengage non-print lever and compose copy. It will be centered horizontally within the box.

When Exercise 7 is used for both Horizontal and Vertical centering follow instructions for vertical centering, Page 34 and 35.

### - A SPACING -

NINETY-EIGHTH ANNUAL REUNION - CLASS OF 1868 - BRIGHAM YOUNG UNIVERSITY

OWENS-CORNING  
FIBERGLASS

LINEAR  
DIFFERENTIAL  
EQUATIONS

VARITYPER

### - B SPACING -

MANAGER VANDERBILT CHEF'S SPECIAL

ALL THE NEWS  
THAT'S FIT  
TO PRINT

PERSONNEL MANAGEMENT  
BULLETIN

OPERATOR TRAINING SCHOOL

### - C SPACING -

NDMIC  
REVIEW

BASIC TRAINING CONSIDERATIONS  
FOR VARITYPER OPERATORS

COMMERCE  
AND  
INDUSTRY ASSOCIATION

WASH AND WEAR REGULAR FABRICS

NEWARK, N.J.

### - D SPACING -

1960-1961  
ADVANCED CLASS  
FOR SUPERVISORS  
AND CHIEF OPERATORS

POLICE DEPT. COUNTY OF ESSEX

PILLSBURY

PERSONNEL MANAGEMENT  
BULLETIN

## EXERCISE 8

### PART A

#### INSTRUCTIONS:

Using any available "B" type font and leader segment compose the following in a 2½ inch column.

#### HOUSEHOLD INVENTORY

Air Conditioner.....	1
Chairs.....	15
China (pieces).....	150
Cupboards.....	1
Dinette Sets.....	1
Dish Washer.....	1
Radio.....	3
Refrigerator.....	1
Rugs.....	7
Sofa.....	2
Silver (pieces).....	150
Stove.....	1
Television.....	2

### PART B

#### INSTRUCTIONS:

Using any available "C" type font and leader segment compose the following in a 24 pica column.

TABLE OF CONTENTS	PAGE
ARTICLE I - Establishment of the Plan.....	1
ARTICLE II - Definitions.....	1
ARTICLE III- Eligibility for Retirement and Amount of Pensions.....	2
Section 1. Normal Retirement.....	3
Section 2. Early Retirement.....	4
Section 3. Automatic Retirement.....	5
Section 4. Total and Permanent Disability Retirement.....	5
Section 5. Employees Not Actively at Work.....	7
ARTICLE IV - Credited Service.....	8
Section 1. Credited Service Prior to the Effective Date of the Plan.....	8
Section 2. Credited Service Subsequent to Effective Date of Plan.....	8
Section 3. Loss of Credited Service.....	11
ARTICLE V - Deductions on Account of Social Legislation.....	12
Section 1. Determination of Deductions for Federal Social Security Primary Insurance Amount.....	12
Section 2. Deductions for Workmen's Compensation and Disability Benefits.....	14
ARTICLE VI - Financing.....	14
ARTICLE VII- Administration.....	16

### PART C

#### INSTRUCTIONS:

Using any available "D" type font and leader segment compose the following in a 2 inch column.

#### GROCERY STOCK SHEET

Canned Goods	CASES
Asparagus.....	1
Beans.....	10
Carrots.....	12
Corn.....	10
Onions.....	5
Red Cabbage.....	5
Small Potatoes.....	12
Ready-Mix	
Angel Food Cake.....	5
Blueberry Muffins.....	10
Buttermilk Biscuit.....	10
Chocolate Cake.....	10
Coffee Cake.....	15
Orange Cake.....	10

## EXERCISE 9

This exercise is designed for practice in setting tabulator stops and to help gain proficiency in plotting and composing tabular copy.

### PART A — INSTRUCTIONS:

Follow the instructions on Pages 49, 50 and 51 and "plot" the following chart to fit into a column 7 inches wide. Allow sufficient "gutter" space to facilitate the use of tabular stops. Choose the correct size type and compose.

TITLE	UNIT	DATA	TAPE	CODE	TAB	FORM	LOC	EST.
Accessories	8,000	967	10,000	00/001	7,432	10/110	11,750	12,000
Advertising	10,000	12,600	672	00/002	4,500	10/111	9,600	13,000
Agriculture	6,453	5,550	3	00/003	3,600	10/112	4,500	10,000
Air Conditioning	50,000	25,000	15,500	00/004	10,340	10/113	650	5,230
Apparel	4,350	15,600	325	00/005	3,540	10/114	300	4,500
Appliances	25,000	12,500	5,400	00/006	15,500	10/115	13,450	10,500
Artificial	450	225	55	00/007	345	10/116	25	450
Art Goods	15,500	12,500	6,450	00/008	15,500	10/117	10,500	12,450
Automobiles	50,000	50,000	25,000	00/009	50,000	10/118	25,000	50,000
Bar & Grill	5,450	2,500	4,250	01/001	250	11/110	2,350	2,350
Bookbinder	350	225	1,225	01/002	350	11/111	150	25
Barrels	10,500	550	750	01/003	7,500	11/112	9,075	4,500
Bicycle	12,450	10,345	8,450	01/004	12,450	11/113	12,450	12,450
Beverage	35,600	35,600	35,000	01/005	35,600	11/114	35,600	35,600
Billiards	2,500	1,225	1,225	01/006	1,225	11/115	2,500	2,500
Bakery	95,000	95,000	45,500	01/007	95,000	11/116	95,000	45,500
Broker	4,500	4,500	4,500	01/008	2,225	11/117	4,500	2,225
Books	85,500	2,450	2,450	01/009	2,450	11/118	2,450	85,500
Building	50,000	50,000	50,000	01/010	50,000	11/119	50,000	25,500

### PART B — INSTRUCTIONS:

Follow the instructions on Pages 49, 50 and 51 and "plot" the following chart to fit into a column approximately 6 inches wide. Choose the correct size type and compose.

CLASSIFICATION	NOTICE	DATA	CODE	FORM	TAPE
Accessories	8.000	967	00/001	10/110	12,000
Advertising	10.000	12.600	00/002	10/111	13,000
Agriculture	6.453	5.550	00/003	10/112	10,000
Air Conditioning	50.000	25.000	00/004	10/113	5.230
Bookbinder	350	225	00/005	10/114	25
Barrels	10.500	550	00/006	10/115	4,500
Bicycle	12.450	10.345	00/007	10/116	12,450
Bakery	95.000	95.000	00/008	10/117	45,500
Carbonated	25.500	25.500	00/009	10/118	75
Carpenter	7.500	5.500	01/001	10/119	NONE
Castings	4.500	4.500	01/002	11/110	125
Chemicals	15.000	15.000	01/003	11/111	750
Dairy	3.450	3.450	01/004	11/112	7
Delicatessen	5.000	5.000	01/005	11/113	125
Distributors	25.500	25.500	01/006	11/114	NONE
Drugs	83.425	83.425	01/007	11/115	1.000
Elevator	9	9	01/008	11/116	NONE

## EXERCISE 10

### INSTRUCTIONS:

Using any "B" spacing type font, automatically justify the following paragraph in a 24 pica width.

Choice of type styles is often a matter of personal taste but—there are a few hints on type selection and use which can make the printed message infinitely more effective. The individual character, by itself, represents an individual design...but in a paragraph or column of text, it often takes on entirely different characteristics.

The choice of type for any job is often wide enough to become confusing. There are hundreds from which to choose...but a good choice depends largely on an understanding of a particular type's advantages and disadvantages in relation to a specific application.

For example, a sans-serif type looks well in brief copy and in forms, but is usually tiring and unattractive in continuous text such as in books and newspapers. For lengthy text, the serif letter is more attractive and far less tiring to the eye.

While size of type is often dictated by the amount of copy to be placed in a given space, every effort should be made to use type that can be read without straining the eye. Continuous text, such as that on this page, should be set in eight or ten point type. Small sizes should be used only for small blocks of copy, footnotes, etc., or where space is at a premium.



## EXERCISE II

This exercise provides practice in setting the machine and composing copy requiring both automatic justification and "run-arounds". For detailed instructions see Page 58.

### PART A

#### INSTRUCTIONS:

Justify the following paragraphs 3½ inches wide, allowing for a picture (1½" x 1½") to be located in line with the left margin. (Choice of type size and style is optional.) Underlined words are to be set in italic.

#### TYPE FACES

It is estimated that there are approximately 6,000 type faces in existence today, but only a fraction of that number are in general use. Most printers and typographers have a sufficient variety to fill virtually any typesetting need. VariTyper Composing Machine type faces are generally available from 6 to 12 point, with complete fonts in each size. A font is a complete assortment of letters and characters of any one style and size of type, either in Roman (upright) or italics (slanted). The VariTyper Headliner Machine "TypeMasters" are generally available from 10 to 84 point. A TypeMaster is a disc containing an assortment of letters and characters.

Capitals are referred to as upper case and small letters as lower case. In lower case letters the upper stroke, as in the letter "d", is called the ascender, and the round part is called the body. The downward stroke, as in "p", is known as the descender. The short crossline at the end of the main stroke of certain styles of type faces is called the serif.

### PART B

#### INSTRUCTIONS:

Use "B" spacing type fonts and justify the following copy 24 picas wide. Center the heading, after composing 6 lines the full 24 picas wide, allow for a picture (6 picas wide by 8 picas deep) to be located flush right of column. Complete remainder of copy the full width of column.

#### TYPE IDENTIFICATION

To most people, type faces look alike: even the expert must study some carefully to differentiate between them. While there is no short cut in learning how to identify the various faces, a careful study of a few key letters will help.

For example, the lower case "g" is one of the most distinctive characters. The elements of this letter are the top loop, the lower loop, the hook off the top loop and the element joining the two loops. By studying the size, shape and position of these elements, the identity of the face can be more easily determined. Other letters that are almost as distinctive are the "p," "a," "c" and "t".

The entire appearance of a printed piece can be altered by improper selection of type faces. Many characteristics — masculinity, femininity, delicacy, formality and others — can be suggested by the type face employed. The guidance of a qualified commercial artist, designer, printer, or typographer in selecting the proper type face is indispensable.

Above all, remember type was designed to be read easily. This means both the selection of the type face and also the size used. Beware of italics! Their primary purpose is for emphasis, not to be read in a mass.

## EXERCISE 12

This exercise will aid students who will be composing exceptionally narrow or extra wide column widths.

### PART A

#### INSTRUCTIONS:

Using a "D" spacing type automatically justify the following paragraph (or a portion thereof) in a column 6 picas wide (1"). Instructions for setting the machine, etc. on Page 60.

#### COPYFITTING

The procedure of calculating type sizes, line measures, and copy areas is known as copyfitting. Before any copy can be set in type, it is necessary to determine the size and style of type and the probable area the type will occupy. If the area to be filled is the prime consideration, then obviously a type size must be selected that will fit the given area. There are different approaches to the problem of copyfitting. Sometimes the copy is specified in a particular type face and size, in a definite pica length. In this case, it is necessary to estimate the total number of lines, paragraph by paragraph. This will indicate the total depth of type, or the number of pages it will take.

### PART B

#### INSTRUCTIONS:

Using a "B" spacing type automatically justify the following copy in a column 54 picas (9") wide. Instructions for justifying wide column widths will be found on Pages 60, 61 and 62; either the "blind typing method" or "line butting method" may be used.

#### PRINTERS' MEASUREMENTS

The point and the pica are two units of measure universally used in printing. Invented by an American printer, Nelson C. Hawks, the point system is now used in all English-speaking countries.

The point measures 0.0138 or approximately  $1/72$  of an inch. In other words, there are 72 points to the inch. Type is measured from the top of an ascending letter such as "b" to the bottom of a descending letter such as "p". The face of the character itself does not reach the full point size of the body. Line spacing is always specified in points: 10 point type leaded 2 points (10 on 12).

The pica is generally used for linear measurements of type or writing areas. One pica equals 12 points. 6 picas are approximately equal to one inch or 72 points. The length of the line is specified in picas as well as the depth of the printed area. For example, a given block of copy is to be composed 20 picas wide and 36 picas deep. This term becomes a part of the vocabulary of the VariTyper operator, as well as the term "point". Each type face in the VariTyper type face catalog gives the number of characters per pica for that specific type.

### EXERCISE 13

Exercises to gain proficiency in copyfitting non-text matter.

#### PART A

##### INSTRUCTIONS:

Fit the following 30 entries into one single column 3 $\frac{3}{4}$ " deep.

5410	1432	4128
9871	9011	8591
7249	7344	4195
4373	1264	1121
8291	3258	2864
9416	6485	2284
1264	0041	7634
9165	7428	7628
3290	8944	0177
9060	8429	6972

#### PART B

##### INSTRUCTIONS:

Fit the following 23 entries into one single column 21 $\frac{1}{4}$  picas deep.

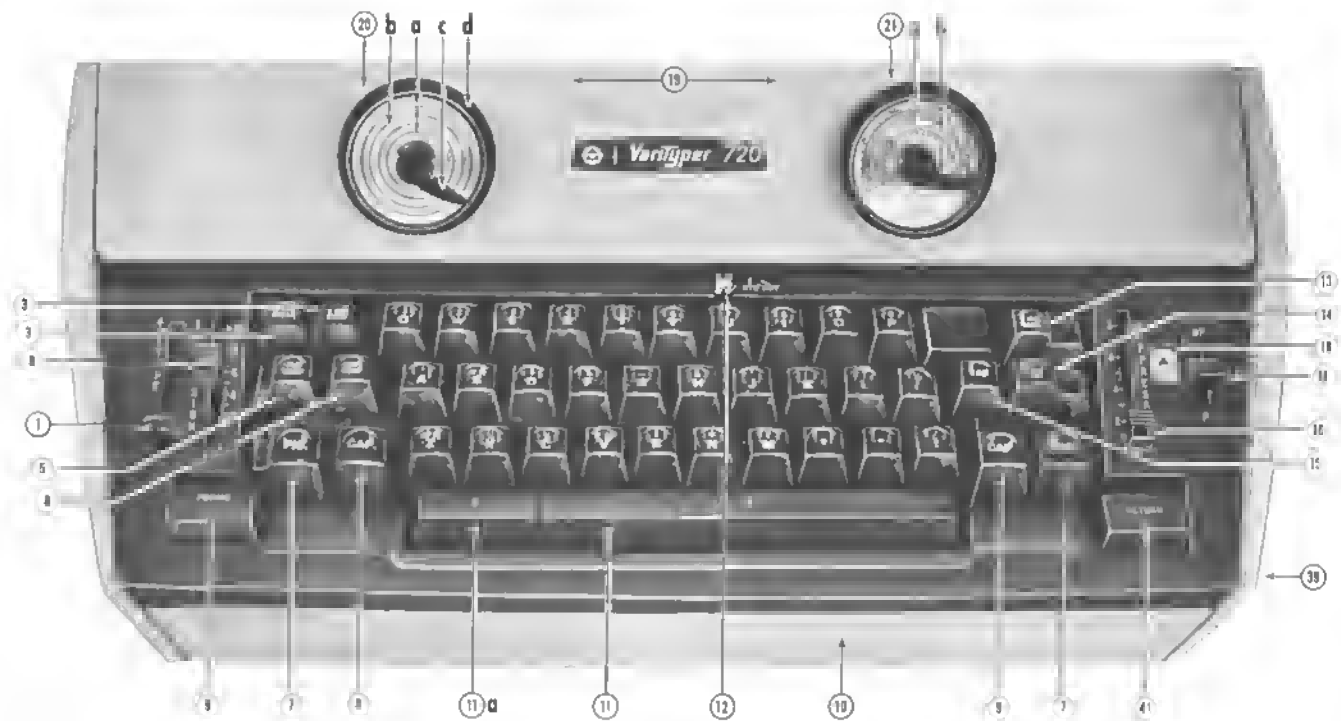
Candy	Ice Cream	Potatoes
Onions	Carrots	Celery
Pickles	Olives	Lettuce
Tomatoes	Cheese	Meat
Oranges	Sugar	Salt
Coffee	Soap	Ice
Milk	Butter	Peas
Cereal	Pepper	



## CAPITAL HEIGHT CHART

TYPE	CAP HT PTS DEC	TYPE	CAP HT PTS DEC	TYPE	CAP HT PTS DEC	TYPE	CAP HT PTS DEC
600-12A...8	.110	690-10D...7	.100	875-7D...5	.072	1060-8C...5½	.078
600-10B...7	.098	690-8D...6	.081			1060-6D...4½	.060
600-8C...6	.081			880-12A...8	.109	1065-10B...7	.094
600-7D...5	.071	692-13A...9½	.134	880-10B...6½	.094	1065-8C...5½	.078
601-10B cap7	.099	692-10D...7	.100	880-8C...5	.071	1065-6D...4½	.060
sm cap5	.069	692-8D...6	.081	880-6D...4½	.060		
605-10B...7	.099			885-10B...6½	.094	1070-12A...8½	.117
605-8C...6	.083	700-10B...7	.097	885-8C...5	.073	1070-10B...7	.094
605-7D...5	.071					1070-8C...5½	.078
		710-10B...7	.098	890-12A...8½	.116		
610-9B...6	.085			890-10B...7	.097	1080-10A...7	.100
610-7½C...5½	.076	720-10B...7	.100	890-8C...5½	.078	1080-9B...6½	.090
615-9B...6	.083						
615-7½C...5½	.076	730-10B...7	.102	900-10C...7	.100	1090-12A...8	.114
						1090-10B...7	.096
620-12A...7	.098	740-10C...7	.099	910-12B...9	.122	1090-8C...5½	.079
620-10B...6	.087	740-8D...6	.081			1090-7D...5	.073
620-8C...5½	.077			920-10B...7	.095	1095-10B...7	.096
620-7D...5	.069	770-10A...7	.100	920-8C...6	.086	1095-8C...5½	.079
625-10B...6	.087	770-8B...6	.081	925-10B...7	.096	1095-7D...5	.073
625-8C...5½	.076	770-6C...4½	.062				
625-7D...5	.071	775-10A...7	.100	930-10D...7	.101	1100-12A...8	.114
		775-8B...6	.082			1100-10B...7	.096
630-12A...8	.108	775-6C...4½	.062	940-12A...7	.096	1100-8C...5½	.079
630-10B...6½	.090			940-10A...5	.074	1100-7D...5	.073
630-8C...5	.072	780-12A...8	.108			1105-10B...7	.096
630-6D...4½	.060	780-10B...7	.098	950-10B...7	.099	1105-8C...5½	.079
635-10B...6½	.089	780-8C...6	.083			1105-7D...5	.073
635-8C...5	.073			970-12B...8½	.116		
635-6D...4½	.060	790-12A...8½	.117	970-10B...7	.101	1110-12A...8	.110
		790-10B...7	.099			1110-10B...7	.095
640-9B...6	.085	790-8C...6	.081	980-10B...7½	.104	1110-8C...5½	.079
640-7½C...5½	.077	795-12A...8½	.115			1110-6D...4½	.063
		795-10B...7	.097	1000-12A...8	.110	1115-10B...7	.095
550-10B...7	.095	795-8C...5½	.078	1000-10B...7	.098	1115-8C...5½	.079
550-8C...5	.072			1000-8C...5½	.078	1115-6D...4½	.063
550-6D...4½	.062	800-13A...6½	.090	1005-10B...7	.098		
555-10B...7	.095	800-12A...6	.085	1005-8C...5½	.078	1120-12A...8	.110
555-8C...5	.073	800-11A...5½	.080			1120-10B...7	.095
		800-10B...5½	.080	1010-12A...8	.109	1120-8C...5½	.079
660-12A...8½	.116	800-9B...5½	.075	1010-10B...6½	.095	1120-6D...4½	.063
660-10B...7	.100	800-8B...5	.070	1010-8C...5½	.079	1125-10B...7	.095
660-8C...6	.081	800-7C...5	.070	1010-7D...5	.072	1125-8C...5½	.079
660-7D...5	.072	800-6C...4½	.065	1015-10B...7	.095	1125-6D...4½	.063
665-10B...7	.100	800-5C...4½	.060	1015-8C...5½	.079		
665-8C...6	.081	800-4D...4½	.060			2000-13A cap6½	.090
665-7D...7	.073	800-3D...4	.055	1020-12A...8	.106	sm cap6	.085
		800-2D...3½	.050	1020-10B...6½	.090	2000-12A cap6	.085
670-12A...8½	.117			1020-8C...5½	.080	sm cap5½	.080
670-10B...7	.100	810-12A...6	.086			2000-11A cap5½	.080
670-8C...6	.081	810-8B...5	.070	1030-12A...8	.114	sm cap5½	.075
670-7D...5	.072			1030-10B...7	.096	2000-10B cap5½	.080
675-10B...7	.100	820-10A...7	.098	1030-8C...5½	.078	sm cap5½	.075
675-8C...6	.081			1030-7D...5	.069	2000-9B cap5½	.075
675-7D...5	.072	830-10B...7	.097	1035-10B...7	.097	sm cap5	.070
		835-10B...7	.098	1035-8C...5½	.079	2000-8B cap5	.070
680-12A...7	.095					sm cap4½	.065
680-10B...6	.086	840-12B...7½	.103	1040-12A...8	.112	2000-7C cap5	.070
680-8C...5½	.076			1040-10B...7	.095	sm cap4½	.065
680-7D...5	.067	850-10C...6½	.089	1040-8C...5½	.077	2000-6C cap4½	.065
681-10B cap6	.086	850-8D...5	.072			sm cap4½	.060
sm cap4½	.065	855-10C...6½	.091	1050-12A...8	.111	2000-5C cap4½	.060
681-8C cap5½	.075			1050-10B...7	.095	sm cap4	.055
sm cap4	.057	860-10C...7	.095	1050-8C...5½	.076	2000-4D cap4½	.060
685-10B...6	.083			1050-7D...4½	.064	sm cap4	.055
685-8C...5½	.076	870-12A...8½	.117	1055-10B...7	.095	2000-3D cap4	.055
685-7D...5	.067	870-10B...7	.100	1055-8C...5½	.076	sm cap3½	.050
		870-8C...6	.081	1055-7D...4½	.064	2000-2D cap3½	.050
690-13A...9½	.134	870-7D...5	.072			sm cap3	.045
690-12A...8½	.119	875-10B...7	.100	1060-12A...8½	.117	2010-11A cap6	.086
690-11C...8	.110	875-8C...6	.081	1060-10B...7	.094	sm cap5	.067





## NOMENCLATURE

- |                                     |  |
|-------------------------------------|--|
| 1. Type Change Lever                | 15. Tabulator Key                                |
| 2. Impression Control Lever         | 16. Non-Print Lever                              |
| 3. Hold Key                         | 17. Horizontal Spacing & On-Off Indicator Window |
| 4. One Increment Space Key          | 19. Front Cover                                  |
| 5. Figure Lock Key                  | 20. Margin Dial                                  |
| 6. Capital Lock Key                 | a. Vertical Line                                 |
| 7. Figure Key                       | b. Face  |
| 8. Capital Key                      | c. Pointer                                       |
| 9. Forms Key                        | d. Outer Rim                                     |
| 10. Type Drawer                     | 21. Justifier Dial                               |
| 11. Two Increment Space Bar         | a. Face  |
| a. Three Increment Space Bar        | b. Pointer                                       |
| 12. Differential-Standard-Out Lever | *39. On-Off Switch                               |
| 13. Three Increment Back Space Key  | 40. Suppression Control Lever                    |
| 14. One Increment Back Space Key    | 41. Automatic Carriage Return & Paper Feed Key   |

\* NOTE: Before typing, VariType Machine must be turned on by pressing on-off switch (39). Indicator window (17) is illuminated when machine is on.



## **VARITYPER DIVISION**

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